Volume 13, No. 4

July, 1958

To Pull Together

Range Conservation

Studies in Tennessee

Water Conservation in Libyan Desert

Floods in Utah Canyon

Techniques

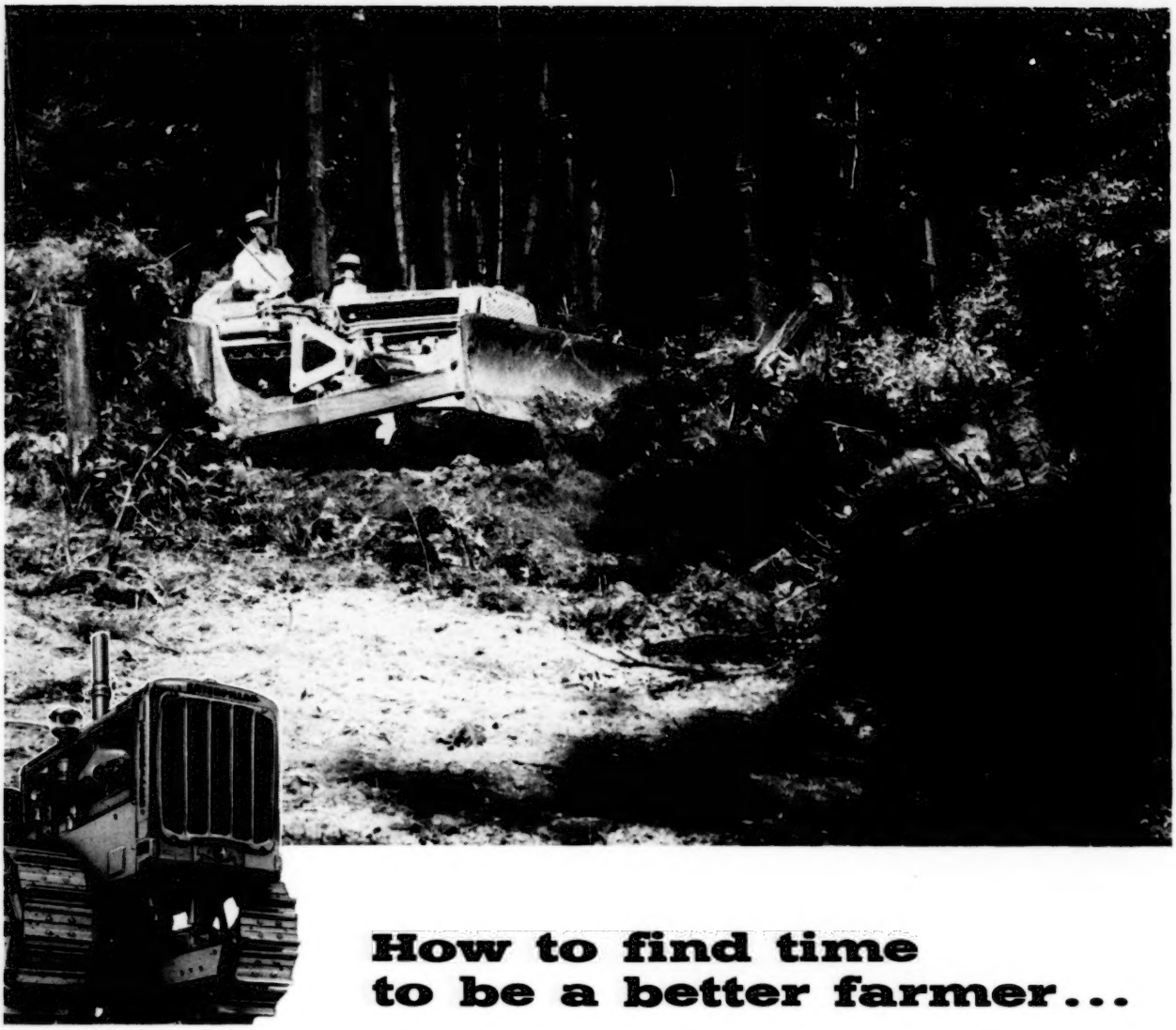
Education & Reviews

SCSA News

SCSA Bylaws

Asheville Program

Map of Points of Interest



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Contents for July, 1958

To Pull Together
D. A. WILLIAMS 147

Range Conservation
E. J. DYKSTERHUIS 151

Cooperative Studies in Tennessee
F. F. BELL AND D. K. SPRINGER 156

Mapping Soils in the Great Smoky Mountains
ROY R. BECK 158

In the Footsteps of the Romans
FLOYD D. LARSON AND OLWEN BROGAN 160

Water and Land Use Problems
J. E. WILLS 163

Parrish Canyon, Utah: A Lesson in Flood Sources
RICHARD B. MARSTON 165

What's the Idea . . . Of this C.E.A.?
CHARLES W. MATTISON 168

Changes in Cropping Systems
D. F. WILKEN 172

Auger Hole Measurements
JOHN G. SUTTON 173

"L'Homme Stupide"
ROGER HEIM 174

Shelterbelt Bears Fruit 175

Field Note Briefs 175

Book Reviews and Literature Briefs 178

News Notes 183
(Points of Interest Map; Bylaws; Chapters; Members; Asheville Conference Program)

Cover: Sons can learn sane and enduring ecological practices to be applied to the lands and waters of America—provided the fathers know. We can no longer afford to be narrow in our knowledge and application of ecological concepts.

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To Pull Together

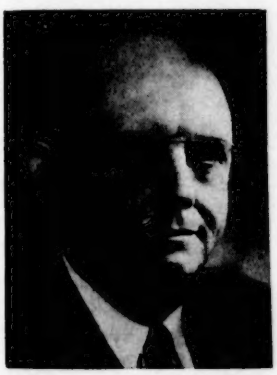
D. A. WILLIAMS

THERE probably is no more significant aspect of today's national action program of soil and water conservation after 25 years of operation than the substantial extent to which local and state interests are paying for putting it into effect.

This local-state support in dollars, services and other facilities points the true direction in conservation that was clear enough from the start, but which could not be achieved overnight. It is that the conservation development and management of our soil and water resources cannot be accomplished, ever, by federal government moneys or efforts alone. Individuals, communities and states have to put their own energies and dollars into the conservation effort locally, and draw upon the federal technical, research, educational and certain financial facilities or help not otherwise available, or not within the capacity of landowners or watershed interests to provide unassisted.

At the outset, the soil conservation program was financed entirely by federal funds, and the federal government actually did much of the conservation work on individual farms and ranches. This was the case in cooperatively selected erosion control and Civilian Conservation Corps projects in clear-cut problem areas, and largely so even when conservation operations first shifted to soil conservation districts.

Although the districts likewise depended almost entirely at first upon services and facilities provided by the federal government, the very nature of the soil conservation district concept pointed to the rapid shift that was to come, from federal to local-state responsibility for the conservation undertaking. Organized and managed under state laws by landowners themselves, the districts quickly demonstrated their competence as a means of insuring local leadership and direction in a program that patently had to be responsive to the needs and desires of local people.



D. A. Williams is Administrator of the Soil Conservation Service, U.S.D.A., Washington 25, D. C.

A Start Was Made

That initial approach to the urgent soil and water conservation job was justified, because we had to start somewhere—and without more delay. Nobody knew for sure, 21 years ago when the first districts came into being as something entirely new as local units of state government, how fast or how far the likewise still new soil and water conservation movement would go ahead. Even the most optimistic soil conservationists or conservation-minded farmers and ranchers hardly could have been expected to foresee the vast accomplishments that have materialized in farm and watershed conservation within two decades.

Reports from districts all over the country confirm the fact that our national soil and water conservation program continues to move ahead effectively. The general trend of district work and activities is gratifyingly upward. There are, however, compelling reasons for maximum local participation, particularly at this time, by individual landowners as well as by all community interests affected. They point up the increasing necessity of utilizing district leadership and organization, available technical help and all our other facilities, or tools, in expediting farm and watershed land-use and water-management planning and treatment.

One of those reasons lies in the increasing work loads and the broadened conservation activities with which the districts inevitably are concerned, in face of a continuing shortage of technical help. A recent survey by the National Association of Soil Conservation Districts of the progress and status of district operations showed that at least three-fourths of the districts over the country need more such assistance. A majority of the more than 2,100 districts initially reporting in the survey also felt that progress was not as fast as they would like it to be.

A second immediate reason for maximum reliance on local conservation efforts and less on federal support is that, because of missile and related defense demands upon federal funds, we cannot look for sufficient increases at this time in federal appropriations for all needed soil and water conservation assistance. Even though any drastic curtailment in federal technical and related assistance likewise is not anticipated, maximum use of local and state financial or equivalent resources is obviously essential for keeping abreast of the conservation job, now and over the long pull.

Individual, local and state interests already have demonstrated their willingness to share this conservation responsibility. The extent of which they have done so now is available as a further guide to making the best possible

use of whatever technical or other resources may be available for doing the conservation job ahead. Because the more than 2,775 soil conservation districts now virtually blanket the country and thus provide a proper common denominator for such a calculation, a natural "yardstick" is the amount of non-federal participation in funds or in services of various kinds that are going into the operation of these districts.

Some 1957 Findings

To this end, the Soil Conservation Service made a state-by-state estimate last summer to find out the total amounts of local, county and state funds being used in the 1957 calendar year for assistance in the soil conservation district program. The findings of this study confirm that a most significant development is taking place in this respect throughout the United States.

The *more tangible* items show, for example, that non-federal contributions having a value estimated at one dollar are being made to the district program for every three dollars made available from the federal government. That is to say, local and state interests—private and governmental—are contributing at least one-fourth of the annual operating costs of soil conservation districts.

That is "operating costs"—*not* the total cost of getting conservation on the land—because this one-dollar-in-four figure does not include any part of what the individual farmer spends in applying conservation measures on his own land. Nor does it include the countless hours of gratis assistance from the many people who in private endeavor are assisting soil conservation districts.

In fact, an earlier study showed the farmer's outlay for seed, fertilizer, construction materials, labor and machinery operation, and other costs to be about five times as much, on the average, as the federal government's contribution in technical or other assistance. Actually, it ranged from about three times as much for such simpler cultural practices as cover cropping to approximately eight times as much for more complex structural measures like those involved in conservation irrigation and drainage.

Thus only about one-fifth of the cost of the conservation work realized in the districts—for district operations and landowners' costs together—is borne by the federal government. The 1957 survey estimates include appropriations or allocations, contributions in funds or in kind, and use of facilities.

State governments, importantly, are appropriating more money each year to help the districts carry on their work, by helping finance the state soil conservation committees and individual districts directly. Every state and territory has provided some such funds for its soil conservation district program in either the year or the biennium beginning July 1, to a total of $5½ million all together.

Active state participation in the leadership and direction of soil and water conservation undertakings is essential to the national effort as well as local, whether it comes through the state soil conservation agency or other resource conservation body. Such concrete recognition of the state soil conservation agency is especially significant. This soil conservation district body represents the state in its own soil conservation district program, and is in position to give the kind of local guidance that helps to insure against any real or imagined dictation by the federal government with respect to soil and water resource policies.

Figure 1. Right there! That's where my neighbors and I got together to dam that big gully. Now that we have a pond there, I'm planning to do a little fishing.

In addition to state funds, the value of county and local resources made available in 1957 to districts through appropriations or contributions shown by the study amounted to a conservatively estimated total of approximately $20 million. In a few states, most of the counties provide some funds or facilities for their soil conservation district programs. In a few of the other states, no county resources are made available. County funds are used largely for such purposes as providing office space, equipment, or clerical help for districts.

Local and state moneys, facilities and services provided to the districts have made it possible to devote a major part of available federal money to principally technical personnel. Soil Conservation Service records show that, on the average, during 1957 better than three-fourths of Public Law 46 money allotted to the states went for personnel to help get conservation on the land. The proportion was as high as approximately 85 per cent in one state, around four-fifths in nearly a third of the states, and in no case below 70 per cent.

The third category of non-federal financial assistance to districts covered in the estimates for last year was that of local contributions by private individuals, civic and municipal groups, business firms, associations and clubs, and various others. Such tangible local support is enjoyed to some extent by virtually every soil conservation district. These funds may be used for such activities as conducting conservation field days, demonstrations, tours, contests, work shops and training courses; for awards, prizes and scholarships; or for issuing newsletters, annual reports or publications.

Another related and extremely important form of local help to districts, on which it is impossible to place an exact dollar value, is the time and services given by thousands of public-minded individuals who believe in the conservation program. Included are advertising with a conservation theme by commercial firms; contests and awards programs conducted by newspapers, farm publications, business and civic, women's, sportmen's and other interests; public service conservation programs by radio and television stations; and other effective contributions.

The National Association of Soil Conservation Districts survey also confirmed the extent of such local support of the district programs—by newspapers, radio and television stations, churchmen, schools, equipment dealers, and private sources. Non-federal support of district programs, like the growth and effectiveness of the programs themselves, depends first upon people's understanding the conservation objectives and realizing the importance and benefits of soil and water conservation to individuals and communities alike. The association findings brought out, too, that the story of the districts' basic conservation program still is not reaching both city and rural people effectively in many districts, pointing to the conservation information and education task ahead for all the conservation and related organizations and agencies.

No attempt was made in the Soil Conservation Service study estimates to include the last-named types of private contributions to the districts' program, nor the time the district supervisors spend in participation in their important state, area or national meetings. They did include, however, an estimate of the time that some 14,000 district supervisors spent in 1957 alone attending to their own districts' affairs. They serve without salary, and none of the traveling expenses that some states allow comes from federal funds.

Figure 2. Ecologically, American communities are a part of the land. Today, a trademark of natural resources management is the community and district approach. Historically, this is one of the great conservation movements.

Many other people also put a great deal of gratis time into the soil conservation districts effort. Although there obviously is no way of calculating the precise dollar value of these combined efforts, such private services donated last year probably was equal to, if not greater than, the total value of the estimated local, county and state contributions.

Non-Federal Support Is Important

The growing financial support of soil conservation district activities by non-federal interests is important in more ways than one:

- It saves money for the American taxpayer on a job we know has to be done by somebody. The federal government's share of the cost of technical services to district farmers in 1957 was less than $73 million. The $25 million total estimated value of 1957 local, county and state support of the districts program represents a growth in non-federal support from zero to one-third in 20 years.

- It represents public recognition of the proved soundness of the districts method in dealing with the urgent conservation task, in keeping with the American concept of democracy. State and local people do not have to put their money and services into the district programs. The reason they do, as I see it, is that the districts method is a *sound approach* to the pressing task of vital resource conservation; this work affects a broad cross-section of community interests—private and public; and *the entire concept is right*. It is democracy in action!

- Non-federal support of district activities enables our technicians to spend more of their time helping farmers with conservation planning and applying conservation measures on the land, thereby achieving perhaps a third more than they could otherwise.

- And it demonstrates the practicability and desirability of cooperative effort through which soil conservation districts have the responsibility of pulling together all available facilities, public and private, to get the job done. The governmental health of the country can be served best when each level of government—federal, state, local—carries its own full share of responsibility, without seeking to or having to appropriate any of the proper responsibilities of the others.

A Wholesome Trend

The fact that the soil conservation district program is receiving such widespread support from such a variety of sources illustrates how, instead of turning wholly to the federal government for help in solving their problems, people are combining local, state and federal effort to accomplish their conservation objectives. This wholesome trend is manifested in the district programs themselves, and in the newer and broader community projects being undertaken through the local-state-federal teamwork provisions of the Watershed Protection and Flood Prevention Act.

Other conservation "tools" also have been made available because people and communities with watershed or other problems wanted them—and are willing to cooperate in using them. There is the long-standing Agricultural Conservation Program, with its increasing emphasis upon permanent-type practices, and with its cost-sharing benefits rated second only to technical assistance itself in the NASCD survey.

Newer authorizations of major promise include the Great Plains Conservation Program, with its key provision under the law that the program must be based on farm and ranch conservation plans, fitted to the physical resources of the whole farm and developed by the farmer. Another is the Conservation Reserve program, with its cost-sharing provisions for conservation planting or other treatment of lands not needed for and least suitable for cultivated crop production.

Opportunity and Promise

We truly are working today in a period of great opportunity and promise, conservationwise. It has taken hard work by many people who believed in soil and water conservation, and who were willing to put their best efforts into it, to bring the Nation's conservation progress to where it is today. All of these interests—local, state and federal, public and private—can get the job done that remains to be done by continuing to pull together with all their might.

Figure 3. The Big Field Day requires know-how, cooperation and ballyhoo. Conservation is still measured in the quietness of and progress on the "back forties." Thousands of cooperators and trained, skilled technicians labor together day in and day out on unseen acres. Here is a drama of democracy and high purpose.

Range Conservation as Based on Sites and Condition Classes

E. J. DYKSTERHUIS

ACCOMPLISHMENTS IN RANGE CONSERVATION must, in the last analysis, be judged by the condition of the range—"by having a look at the grass." In the culture of our times, range practices that bring machines and chemicals into play are psychologically acceptable and widely applied. But whether they are needed and used or not, there is no lessening of the need to manage grazing for the attainment of specific conditions in the vegetation.

Management of grazing based on range condition is old in rule-of-thumb application; new in measured application. In the evolution of the range profession, what was once almost wholly an art has become at least in part a science. The shift has left us attempting to apply many old terms in a new and more scientific setting. Science is concerned with facts of how things happen and *how much*, whether the field of inquiry is chemistry or grazing management. When we attempt to measure *how much* a range is overgrazed rather than simply give it as opinion that the range is overgrazed, then we are forced to re-examine not only that term and concept, but also those often used interchangeably with it, such as poor range condition, overutilized, and overstocked. We may even have to define the terms range land and range; something we have "dodged" for a long time.

As used here, the term *range land* means land on which the climax vegetation is a natural pasture. Examples are prairie, pampa, steppe, or velt lands. Also, some savannah, desert scrub, and coastal marsh lands are range land. Much range land can profitably be cultivated, and is; but native forage plants are its natural potential. Contrasted with all natural ranges are all tame pastures. Tame pastures are composed of introduced and domesticated forage plants, singly or in mixtures. They have been established, since settlement, on range land, forest land, and other land, but they do not occur naturally. Maintenance of tame or "improved" pastures through decades generally is feasible only on arable land.

Range condition classification must logically be limited to range on range land. If volunteer pasture on forest land is classified as range in poor condition it is quite natural to assume that as cover conditions improve the grazing will improve; whereas, in reality, improvements in cover and in ecologic conditions on natural forest land will result in poorer grazing but better and better forest. The distinction between range land and other land is necessary, too, because a self-perpetuating seeding can be established only on range land. Fundamentally, it must be recognized that the natural law of plant succession operates to restore the climax or original vegetation; hence, to improve the condition of ranges on range lands but to destroy tame pastures.

Different kinds of range land are referred to as range sites. These are complexes of soil and climatic conditions. Functional differences between range sites are best distinguished by measurable differences in kind or amount of their climax vegetation.

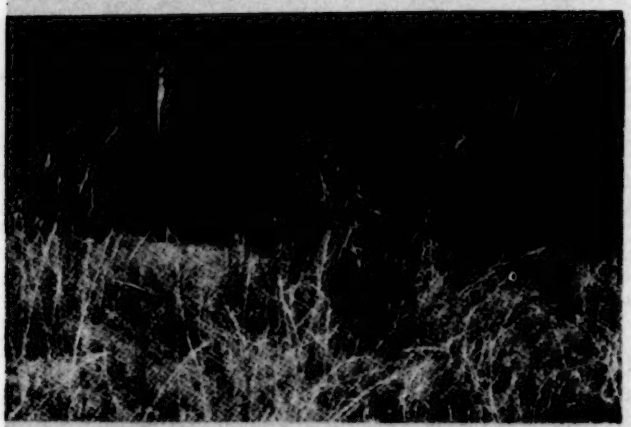
Site is not to be confused with type, because many types of vegetation may successively occupy the same range site in response to different grazing treatments. Current range condition can be measured in relation to some known potential condition and the only certain indicator of potential is the site.

Management of grazing influences range condition directly, and the site indirectly. Grazing practice determines place, time, and amount of removal of foliage. Removal of green foliage by grazing retards the growth most among the species grazed most. This favors the species grazed least because more of the water, nutrients, and light available per unit of surface is left for them. Thus, without practical management of grazing, the normally shorter species are favored as well as the least palatable and the annual species. As the taller species lose ground under close grazing, their place is taken by species short enough to escape with a high percentage of their foliage ungrazed. The result is general reduction in yield as well as measurable change in species composition.

On range lands, this process, fortunately, can be reversed. Ordinarily a change in management of grazing is all that is required. If secondary plant succession is permitted or fostered, the combination of plants that produces the greatest tonnage of foliage will crowd out other combinations of plants resulting from past mismanagement. Foliage on range land in top condition is almost all forage.

Furthermore, the number of livestock that range land can profitably support depends more upon quantity than quality of forage. When protein and phosphorous content are adequate for good nutrition, a higher analysis with equal tonnage does not increase the number of livestock that can be carried; rather it carries the same number better. If the forage is deficient in quality we can add supplements but if the forage is short in quantity we are forced to reduce numbers grazed.

E. J. Dyksterhuis is Range Conservationist, U.S.D.A., Soil Conservation Service, Lincoln, Nebraska.



Differences in use alone caused the differences in these native pastures. Soil and climate are same. Proper use can make all look like top picture.

Excellent Range Condition

Taller grasses, such as GREEN NEEDLEGRASS, NEEDLEANDTHREAD, WESTERN WHEATGRASS, are abundant. These grasses, with an understory of BLUE GRAMA and JUNEGRASS, make up most of the ground cover. Seed is produced in favorable years. Good natural mulch accumulated on the surface lets water soak into ground faster. Forage production is at its highest and erosion is controlled.

Good Range Condition

BLUE GRAMA, a warm-season, short-growing grass, has partly replaced the taller, cool-season grasses. It now makes up a larger percentage of the cover than for Excellent Condition. When BLUE GRAMA replaces cool-season grasses the season of green grazing is shorter.

Fair Range Condition

Very few of the original taller-growing grasses remain. There is much bare ground, soil crusting and runoff. Rainfall is lost instead of stored for grass growth. Use of range conservation measures will restore POOR or FAIR condition ranges to EXCELLENT condition.

Poor Range Condition

Nature tries to keep the ground covered with something. When use is so heavy that taller growing grasses cannot survive, she substitutes cactus, annual weeds, or very short kinds of plants that can escape grazing.

S.C.S. No. 5,L-12,470

Figure 1. Reproduced here is an "information aid" showing a one-page translation of the ecological approach to range condition classes for the stockmen of a specific area. Conditions in four adjoining pastures on the same day are shown. Each pasture has the same kind of deep silty soil, under 14 inches of average precipitation in eastern Montana.

Secondary succession on ranges entails complex changes in plant cover, in microclimate, and in productivity of soil. The net result is improvement in the range condition for the site, measurable with certainty by changes in species composition. Succession to climax on range land does not exhaust the site, and cause the vegetation to become "sod-bound." Rather, the climax produces all the foliage the site is capable of producing on a sustained basis without cultivation or fertilizers.

The greater the departure of range vegetation from climax, the greater the exposure of the site itself to destruction by the elements, the greater the loss from the site of rainwater and snowmelt, and the greater the loss in average annual production of foliage. For these reasons range condition can be defined as "the percentage of the present vegetation which is climax vegetation for the site" (Fig. 1).

Determining Condition Class and Trend

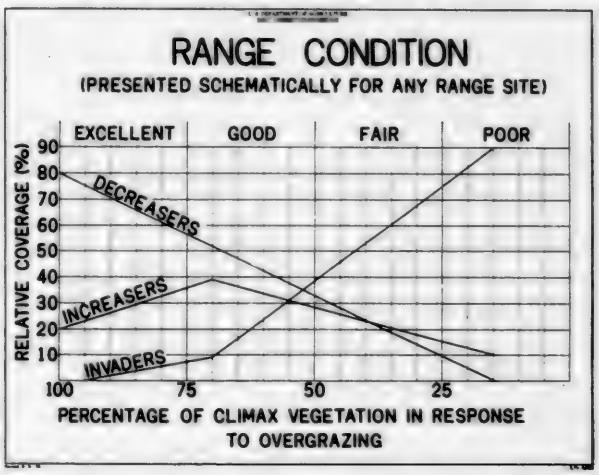
Range condition is classed as excellent on sites supporting 76 to 100 per cent of climax vegetation, as good with 51 to 75 per cent, as fair with 26 to 50 per cent, and as poor when a fourth or less of the current vegetation is of the kind found in the climax for the site. Short-term trends in condition, within these four broad classes, cannot be taken into account in recorded inventories of range resources nor in long-term planning. Condition class is measured by departure from 100 per cent climax vegetation, because there is no other point from which total deterioration of natural cover can be measured.

Grazing is managed to attain or maintain excellent or good range condition, rather than climax. The result on most sites is the climax *type* of vegetation, even though minor species are missing or poorly represented.

A quantitative procedure for determining the condition of ranges, and its background of researches and experience, was reported a decade ago (Renner, '48; Dyksterhuis, '49). Scientific bases recently were re-examined. This appeared advisable because of experience gained and rapid advances in related sciences. Advances in site classification were fostered by an increased understanding of climate, soil, and vegetation as continua; by better definition of climax; and by recognition of the ecosystem as the basic unit (Dyksterhuis '58).

In the development of a quantitative, rather than qualitative, classification of range conditions, it was and still is believed necessary to: (a) Distinguish between factors relating to trend in condition and factors determining a condition; (b) Integrate data from the sciences of descriptive climatology, cartographic edaphology, and vegetation science, under the climax theory, for practical range management; (c) Classify range sites by differences in their potential natural vegetation, rather than by differences in current types of vegetation; (d) Distinguish between lands with climaxes suitable for grazing use and lands with other climaxes such as forest; (e) Recognize economic considerations but not permit them to influence the ecological conception of the highest range condition for each site; (f) Make proper distinction between stages in primary plant succession and range condition classes; (g) Displace the time-honored classifying of range plants as either *weeds, grass and grasslike plants,* or *shrubs,* with a classification based objectively on response to grazing, namely, *decreasers, increasers,* and *invaders,* as measured from potential vegetation; (h) Displace the qualitative concept of "forage density" within a static vegetative type with a quantitative measurement of relative foliage production by species of a dynamic vegetation on a relatively stable site; and (i) Quantitatively determine condition by measuring departure from climax for specific types of sites rather than quantitatively describing selected conditions (Fig. 2).

Figure 2. Schematic diagram of relations between major variables used to classify range conditions.



Steps in the procedure include: (1) Mapping of sites based on soils differences within a climatic belt; (2) Mapping of range condition classes over the site as *excellent, good, fair,* or *poor,* depending upon percentages of *decreasers, increasers,* and *invaders* as related to climax vegetation for the kind of site; and (3) Determination of trend from current condition, by consideration of factors which permit either secondary plant succession (upward trend) or cause range degeneration (downward trend).

Since trends may change quickly and may originate from many causes, though usually from changes in weather or grazing intensity, they commonly are deduced from qualitative evidence. Thus, the trend on a range kept closely grazed from spring to late fall would unquestionably be downward even though the condition class remained the same. The trend on a range deferred

during a rainy growing season would be upward but change in kind of vegetation and, therefore, condition class, might not occur that year.

Ranchers can make qualitative appraisals of trends in different range pastures as a basis for prompt adjustments in grazing. Quantitative measurements of trends in range condition over periods of longer than a year provide data with many uses. A procedure has been devised and is widely applied (Parker, '51).

"Overgrazed" Means Unsatisfactory Range Condition

The term "overgrazed" can now have specific meaning. We have long been accustomed to calling weedy pastures "overgrazed"; weeds being plants out of place. We require no knowledge of the current stocking rate nor the degree of use to recognize an overgrazed pasture or range. Hence, "overgrazed" means unsatisfactory kinds and proportions of plants, considering what could grow on the site. It follows that the range condition classification provides a means of determining and stating specifically *how much* a pasture is overgrazed. In the range-condition system the amount of improvement possible is the exact reciprocal of the amount overgrazed. In other words, when fault is found the solution and degree of improvement possible is also pointed out.

Accordingly, it is more informative to name the condition class than to point out overgrazed areas. Excellent range condition means the site is not overgrazed, while good, fair, and poor conditions refer to three specific grades of past overuse that show today, but can be corrected through one, two, or three classes.

Overgrazing results from overutilization, and overutilization results from overstocking. An overstocked condition on a pasture can be corrected in a day by taking stock off. An overutilized condition can usually be corrected in a season by resting the pasture in the correct season the following year. Correction of an overgrazed condition requires at least two and often many years, depending upon climate and the degree of overgrazing as shown by the range condition class.

Improvement of an overgrazed range—that is, improvement in range condition—starts with a decision to stock the pasture at a rate to permit improvement. A choice between rapid or slow improvement must be made. A stocking plan serves the rancher much as the compass bearing serves the ship's captain between ocean ports. The rancher and the captain are seldom exactly on the planned figure, but nevertheless need such a guide because they must adjust to it to reach their objective.

Weather conditions cause great annual fluctuations in forage production and numbers must be adjusted seasonally to finish each grazing year with approximately the degree of use needed for the rate of improvement chosen. Light or no use at the end of the grazing season results in rapid improvement, moderate to full use results in slow improvement. Close or severe use one year can offset improvement of another year. Dry or cold seasons force adjustments in livestock grazing to offset changes in availability of pasturage, just as a ship's planned course is adjusted to offset sidewinds. Seasonal checks on degree of use should guide temporary departures from the long-time plan of stocking aimed at maintenance or improvement in range condition.

Intensity and Time of Grazing

A planned stocking rate is plainly not the equivalent of "grazing capacity" or "carrying capacity." The greater the difference between current and potential forage production on a site, the greater the difference between grazing capacity and the recommended stocking rate. Certain ranges may profitably be stocked far under carrying capacity to permit range improvement. Thus a very shallow site in excellent condition might be stocked heavier than a lowland site in fair condition even though the lowland site produced the most pounds of forage per acre and would easily carry the most livestock. Nothing would be gained by stocking the very shallow site below grazing capacity because the vegetation is already in top condition. Stocking the lowland site at capacity would mean that it would continue indefinitely to produce only about a third of what it could produce if managed so as to improve from the fair to the excellent condition.

Management of grazing includes suiting the *time* of grazing, as well as the intensity, to site and range condition. Ranges in poor condition are not only poor in total average forage production, but also in kinds of edible plants available through the year. As range condition improves, livestock can exercise more choice.

There are inherited differences among range species that determine the time of year within which each *can* grow rapidly. The differences are grouped very broadly when we refer to warm-season and cool-season plants. Grazing animals on native ranges systematically change the proportions of the various species that compose their diet through the year, because different species successively reach their zenith of growth, and then become fibrous, as the year advances. It is a truism that each species is most palatable and richest in protein, phosphorus, and carotene during the months when, by its inheritance, it grows most rapidly. Grazing management and any seasonal check on degree of use will have to take such species differences into account.

Of course, range livestock search eagerly for any green species when the bulk of the forage is brown. On native range in poor condition, there usually is no off-season green "picking" for livestock. But as such ranges improve to excellent condition, diversity of species, with

respect to season of growth, also increases. Hence, management of grazing should include rests in different seasons to increase both specific cool and specific warm-season plants. It is seldom economical to set stocking rates low enough under continuous grazing to permit recovery of species green in the off-season. Well-timed resting alternated with moderate stocking is a more feasible means of restoring excellent condition.

Appropriate seasons for resting and grazing are in some cases related directly to condition classes. For example, in true prairie climate, ranges in excellent condition can be maintained by grazing to full use (about one-half the growth) during the time of year when most rapid livestock gains are possible. This is the spring and early summer. Complete rest in the fall, to allow carbohydrate storage, is then adequate for maintenance of excellent condition. Deferment for seed production is not necessary because the stand is renewed vegetatively when in excellent condition.

In contrast, ranges in poor or fair condition cannot be even moderately used during the period the forage is most nutritious if the operator hopes to restore the range to its full production within a reasonable time. Rather, it is usually most practical to rest such ranges during the full growing season and to use the pasture for winter grazing with concentrates. Under this treatment the condition commonly improves one class every one to three years until excellent is reached.

On some ranges in poor condition class, a determination must be made if there are sufficient plants of the climax left scattered about to seed the area within a reasonable number of years. It must be kept in mind that first generation offspring of climax grasses are usually found within a rod of the parent. Therefore, it may not be economic to wait for natural revegetation on some ranges in poor condition. The choice between natural and artificial reseeding can sometimes best be made following a complete rest during a growing season. Then the ordinarily closely grazed choice species can be seen above the weedy invaders. This is often the only practical way to determine their distribution over the range and whether they are closely enough spaced for natural reseeding.

Brush Control and Range Condition

On ranges in poor or fair condition because of abnormal amounts of brush, a rest prior to clearing can show whether the expense of artificial reseeding should be included in the cost, or whether brush removal followed by one or two years of rest during the growing season will be adequate. During the season of rest prior to clearing, the climax perennials remaining will regain some strength and produce some seed with which to enter the race with the weeds for the area bared in brush clearing.

On some range sites certain woody species were always present and amounts up to that normal in the climax vegetation for the site would not lower the range condition class. Constant reclearing is necessary to maintain such pastures if less than normal amount of brush is desired.

Thinning of the brush to an amount normal for a site can often be maintained by management of grazing alone. On some sites, however, the equivalent of the original fire influence may have to be added. Either or both methods may be much more economical than mechanical maintenance of a cleared area. Normal equilibrium in competition between grass and brush occurs in the excellent condition. Unbalance between grass and brush brought about through overuse by grass eaters should not be replaced by an unbalance brought about by the overuse of brush killers.

Summary

Range condition classification is a basis for planning ahead several years to economically increase production of native forage on each kind of range land (sites). For the individual operator this entails long-term decisions, such as size of breeding herd. By contrast, checks on degree of use affect short-term decisions, such as whether to sell or hold young stock and whether to hold or use emergency feed reserves.

The amount of the current production that *has been grazed* is expressed as a degree of use. Proper use from year to year on natural pasture lands permits range improvement through natural plant succession to the point where a type of vegetation in equilibrium with the soil and climate is reached. Site and range condition class determine what a range *can be expected to produce now,* and in the *future,* under various seasons and intensities of grazing.

Today, we can quantitatively determine range condition on many types of sites by relating current species composition to that of the climax. With such knowledge of both current and end product, we can adjust time and intensity of grazing to meet the needs of species higher in secondary succession. Moreover, since *change* in species composition is the indicator of succession, these changes can actually measure the amount of range improvement that results from different kinds of management.

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Cooperative Studies in Soil Productivity and Management in Tennessee

F. F. BELL AND D. K. SPRINGER

MANY DIFFERENT SOILS occur in Tennessee. They vary greatly in their capacity to produce crops and in their response to soil and crop management practices. A knowledge of yields of various crops under defined levels of management inputs that could reasonably be expected on a sustained basis for each of the more significant or "key" soils is sorely needed. Such information is basic in assisting farmers in making sound decisions involving the wise use of their capital, labor and land resources. Soil productivity and management studies by University of Tennessee Agricultural Experiment Station in cooperation with Soil Conservation Service point to a practical way of gathering management and yield information for soil mapping units.

The results of field experiments conducted by the Experiment Station constitute a good source of crop yield information and the response to management that can be expected for the soils on which the experiments were conducted. However, the number of soils represented by such field experiments is a small part of the total found in Tennessee. Furthermore, field experiments have not been conducted on many important soils that occur in the state.

In 1954, a cooperative study was initiated by the Agronomy department of the University of Tennessee, Tennessee Valley Authority, and the Soil Conservation Service to investigate the productive capacity of a number of the more important soils when cropped under defined levels of management inputs. Also, certain county agents of the Agricultural Extension Service have been and are contributing to the program through thesis problems for graduate study.

Before making extensive studies on a large number of soils it was necessary to investigate and develop reliable and economical methods of obtaining management and yield data. Each crop usually demands a different approach to such information. The best way of obtaining data for cotton will probably not be the best way to obtain data for corn. Methods of gathering management and yield data have been developed for cotton and corn. A study is presently under way to develop a satisfactory method for obtaining management and yield data for small grain.

To determine an appropriate method for different crops several methods are tried in the field during one harvest season. Following an analysis of the field data, a joint decision is made as to the method that will be best to use. A work plan and a schedule of questions is written for the crop to be studied on a select group of soils. This work plan and schedule serves as a guide to the work unit conservationist gathering the management and yield information during the year. A brief description of the methods being used in collection of data for cotton and corn will be described.

Cotton was one of the first crops chosen for study for many reasons. First, all the crop is sold on the market, therefore reasonably accurate yield records can be obtained from gin receipts. Also cotton is usually grown on small fields by share croppers. This makes it possible to select uniform fields. Acreage data by fields are also available from the local ASC records.

About 2,000 fields were screened in 1954 and 1955 to obtain approximately 124 fields each of which consisted of a single soil mapping unit. Crop and soil management data were obtained by interviews with the owner and/or operator. Soil samples were collected from each field and tested for pH, percentage of organic matter, available phosphorus, exchangeable calcium, and exchangeable potassium. The yield of cotton was obtained from gin receipts. These gin receipts were obtained primarily from the farmer with some supplementary aid by ginners.

Management and yield data were collected from some of the major bottomland soils of the West Tennessee region—Hymon, Ina, and Falaya; and certain of the major upland soils—Memphis, Loring, and Grenada. Most of the bottomland fields are nearly level and most of the upland fields are gently sloping and moderately eroded.

The 1954 and 1955 cotton yield data have been summarized and management levels have been defined. Yields on different soils have been compared. It appears from these data that Falaya significantly outyielded Memphis or Grenada at either high or low level of management in 1954, but 1954 was one of the dryest years on record. In 1955, with a more favorable season, the yield was not significantly different between Falaya and Memphis at a high level of management.

In 1956, management and yield information was gathered in 15 counties to determine and develop the best method to obtain yield data with corn. From this study a systematic "row method" of harvest sampling was selected. Wagon and crib measurements methods were also

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studied but the results indicated that these methods were not as reliable and economical as the "row method" of harvest sampling.

In 1957, thirty soil conservation districts in East Tennessee cooperated in the corn program. The work unit conservationist in each district selected 3 to 4 fields on which corn would be grown. The 3 to 4 fields finally selected were to represent 3 to 4 different soil conditions in East Tennessee. As nearly as possible, each field was to be chosen from one of the several following soil conditions: (1) well-drained bottomland and young colluvial soils, (2) well-drained young terrace and old colluvial soils with silt loam surface and silty loam subsoils, (3) well-drained upland soils with clay, silty clay subsoils, (4) imperfectly to poorly-drained pan soils.

Farms being operated at a fairly high level of management which included adequate fertilization and supporting conservation measures were chosen in order to more nearly determine the productive capacity of the soils studied. The selected farmers usually were cooperators of the soil conservation district since a soils map and cropping plan were available to speed up the screening and selection process. In order to be sure that the field or harvest plots were properly classified according to the correct soil mapping unit, each field was reviewed by the ranking soil scientist of the area. The plot area to be harvested was delineated on an aerial photograph and kept as a permanent record. Surface soil samples were taken soon after the field was selected and sent to the University of Tennessee soils laboratory. These were tested for pH, available phosphorus, available potassium and available calcium and percentage of organic matter. During the summer, soil and crop management information was collected from the owner and/or operator on each selected field. This was recorded on a soil productivity and management schedule of questions.

In the "row method" of obtaining corn yields, yield samples were obtained from each field by weighing the shucked corn from 75 feet of row at six locations within the soil mapping unit, according to a systematic predetermined plan. The plant populations and the number of lodged plants were also determined at the time the corn was harvested. Moisture determinations were also made on the harvested grain samples. This was done by selecting three ears of corn from each harvest sample, making a total of 18 ears. Moisture determinations were made on the 18 ears, and all yields were adjusted to a 15.5 per cent moisture content.

During the 1956 study of methodology with corn, corn yields and management data were collected from a total of 49 fields. It is expected that management and yield information will be obtained from about 100 fields during the next season. It is anticipated that it will require 5 years of management and yield data on a soil mapping unit to give reliable information on its productive capacity at defined levels of management inputs.

Claude Crowley, work unit conservationist, SCS, weighs corn from test fields on cooperator Harry Warwich's farm.

The field work of selecting the test fields, making arrangements with the farmers, collecting soil samples, gathering soil and crop management information and harvesting yield samples is largely done by the Soil Conservation Service personnel in each soil conservation district. The laboratory work of testing the soil samples, making moisture determinations on the corn samples, and summarizing, analyzing and reporting the results annually to the work unit conservationist and other interested agricultural workers is done by the Agronomy Department. As a result of this cooperation and teamwork, valuable information is being collected and analyzed.

Interest in and enthusiasm for this cooperative study is growing each year. Cooperating farmers and agricultural workers are very much interested in the management and yield data obtained locally. Local yield information with adequate records of soil tests, and management practices used on a specific soil is valuable information for farmers and agricultural workers to use in planning a sound land use program. With such management and yield information from representative soils, projections can be made as to the productive capacity and response to management of similar soils on other farms in the region. One county will be able to use information secured from several adjacent counties.

It is hoped that the study can be expanded to include small grains and certain forage crops that are included in most cropping systems. Accumulation and use of such soil productivity and management information collected directly from farms should lead to better land use and greater profits to agriculture.

Mapping Soils in the Great Smoky Mountains

ROY R. BECK

MAPPING SOIL SAMPLE AREAS for the national conservation needs survey in the Great Smoky Mountains proved to be an interesting job for John M. King, Jr. Soil scientist King, who works out of Waynesville, North Carolina, in the Blue Ridge-Great Smokies complex, had three sample areas to map deep in the Smoky Mountains. This country, some 40 miles west of Mt. Mitchell, is so inaccessible that the natives, descendents of hardy Scotsmen, claim remote areas have never been seen even by Indians.

Conservation aid Carlyle Davis, great grandson of the first settler in the 16-mile-long Pigeon River gorge, went with King to help locate the plots. With Davis's help, soil scientist King mapped out a route that would enable him to survey all three sample areas in one day.

The route they chose led through wild country filled with legends of Indians, settlers, and wars, logging, whiskey stills, fights and killings. It is in the center of this area, about halfway down Pigeon River gorge, where the majestic Walters Dam has been constructed to divert the river's waters through seven miles of tunnel for hydroelectric power development.

King and Davis left Waynesville bright and early on a sunny morning in July and drove the pickup truck north to the top of Max Patch Mountain, site of the Salvation Army Citadel. It was here that Major Cecil Brown first brought religion to the backwoods folks of Hurricane country. All but three families have now moved out and the entire area is included in Pisgah National Forest. From Max Patch the two soils men drove slowly down the side of the mountain over a rough road that had been built by the Civilian Conservation Corps, to the Pigeon River gorge. Just before reaching the river, they passed Cold Springs Ranger Station, headquarters of Dewey McCall, game warden for Harmen Den Wildlife Management Area, a cooperative Federal-State project. This area was stocked with deer two years ago and McCall is having his troubles protecting the deer from two-legged as well as four-legged predators.

At the river, King and Davis drove onto the incomplete interstate highway. Great rock cutbanks rose on their right as they drove down this road. On their left, a man-made talus slope of rock, blasted and bulldozed from the side of the gorge, dropped to the river some 300 feet below. The riverbed was almost dry since most of the river's flow was going through the tunnel to the power plant downstream.

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"Jack" King's first sample area was across the river on the old Hicks farm, a place that reeks with legends. Best remembered is the double killing that took place there: Two men had wandered downriver into strange country. Both were shot and buried in a deep hole. Then their horses were killed and piled in on top of the bodies in the hope that, if a search developed, the searchers would be discouraged by the horses' bodies, should the grave be found. Actually, the killers were discovered, tried, and sentenced to life imprisonment.

Gingerly, King climbed down the steep rock slope, carefully choosing his footing so as not to start a slide.

At the river, schools of trout swam about in the clear water, apparently fearless of intruders. Across the river, "Jack" mapped a long strip of riverwash. Beyond that, he found about six acres of colluvial soil at the foot of the mountain. It had been cropped so hard that invading vegetation was as poor as one usually finds on severely eroded residual soils. That wasn't the case around the old log house. Here, in a very small area that hadn't been cultivated, weeds grew head high and tall shrubbery almost hid the house.

After completing the survey, King returned to the river following directions called to him by Davis, who had stayed on the roadbed high above. Getting back up that steep rock slope was even worse than going down, but King made it without a slip.

The pair continued down river, edging the truck past huge slides in the newly cut road. At several places there was barely room to get by without rolling off the edge of the roadbed. They stopped before the unlined tunnel through which they must pass. Rock from the tunnel's ceiling littered the road, but tire tracks told them some other hardy soul had dared to go through in a jeep. Bravely they got back into the pickup and drove through.

It wasn't far to the Tennessee line where a bridge spanned the river on a road that led into the Great Smoky Mountain National Park. A short wooden span between abutment and pillars of this lone bridge sagged dangerously, but they crossed safely and headed on. Two miles up river, King and Davis passed the power plant where water drives turbines after its seven miles' trip through the tunnel from Walters Dam.

Back again in North Carolina, the two men searched out the second sample plot. Half of it was on a small mountain farm, now abandoned except for the burley tobacco allotment. The other half was over the ridge in the park. King mapped the area covering the farm.

With the second area mapped, they crossed Mt. Sterling Gap by following N. C. Route No. 284, a narrow winding mountain road. The Appalachian Trail follows the ridge over Mt. Sterling. Across the mountain a long tortuous descent into Cataloochee Valley brought them to one of the truly beautiful areas of the Great Smokies. Only a few families remain of the many who once farmed here. Cataloochee Creek is famous for trout fishing, made possible by the elimination of silt when cultivation ceased in the watershed.

King and Davis ate their lunch and then headed downstream, walking along an old skid trail. It was several miles before they got out of the National Park and reached the last sample plot. "Jack" King climbed over the timbered slope, completed the survey, and the pair then returned to the truck.

They headed home over Cataloochee Divide. At the top of this mountain, they made their last stop. Behind them, the sun was dropping low over 6,622-foot Mt. Guyot which dominated the horizon. Before them spread the hills and valleys of Haywood County, a welcome sight to end their working day.

Above: **Lunchtime for John King and W. Carlyle Davis during a brief stop at the Cataloochee Ranger Station.**

Below: **Cataloochee Creek, noted for trout, viewed from bridge on N.C. 284A near divide on Mt. Sterling.**

One of the many inspiring views seen while mapping soils in the Smokies—Mt. Guyot (6,622 ft.) near the center of the range.

In the Footsteps of the Romans

FLOYD D. LARSON AND OLWEN BROGAN

Figure 1. Ornate buildings at Ghirza depict the past of a rich agriculture built upon waterspreading. In the foreground are the tombs of the leading families, in the background the settlement, beyond that the broad wadi.

EVERY VISITOR to the pre-desert fringe in Tripolitania is struck by the abundance of its Roman ruins. In a wadi (dry river bed) where today there will perhaps be but few Bedouin encampments, for only a few months in the spring while the pasture lasts, the heights at the side are often crowded at frequent intervals with great buildings like feudal keeps, so that one can imagine that this is how the Rhine might look if all its water ran out of it.

These buildings, often preserved to an astonishing degree, can be counted by the score, and one's first reaction is to exclaim, "Ah, how different things were in Roman times. The climate must have changed since those days."

Things were, indeed, different, but as far as climate goes they were much the same then as now. The present melancholy picture is due in large part to the destruction of the natural vegetation and to ever-increasing soil erosion.

Figure 2. Agricultural scene carved on a Roman tomb at Ghirza. *Above:* sawing plowing; *below:* plowing, clearing land.

The occupants of these ancient castles were Romanized Libyans—men with strange hybrid names like Marchius Nimmira or Flavius Isiguar, or with names showing the old Carthaginian influence, like the Annobal (Hannibal) whose epitaph still remains on a tomb fifty miles out in the wilderness beyond the nearest present-day settlement.

The settlers lived by the cultivation of the wadi beds. The high ground between the wadis is all too often a stony waste, though in those days there must have been a great deal more pasture than exists today. The wadi beds, however, if only enough water can soak into their rich soil, are able to produce fine crops. The Romans solved this problem by building low stone walls or dikes across the wadis at frequent intervals, often 80 yards or even less. They were designed to hold up the run-off of the wadi when it came down in spate [freshet] and to spread the water evenly so that it should sink in gradually over all the cultivable surface. So much water comes down after a big storm that it covers all the area from bank to bank.

Wadi Ghirza was such a place, with its Roman waterspreading walls and the fields between them and the village which these supported. It is always difficult to estimate the population of a ruined place, but at Ghirza there are at least forty buildings, many of them con-

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sisting of two dwellings and five of them being very large ones of the "fortified farm" or "castle" type. Scattered round the fortified farms are numbers of subsidiary huts.

Figure 3. Ghirza fortified farm, with remains of tower and other smaller houses in the background.

So, for its heyday, a population of four hundred is a conservative number to suggest. The community seems to have flourished. Its chief families were able to afford elaborate tombs which they decorated with sculptural scenes of the life they knew.

Between A.D. 300 and 500, the Roman Empire was running down, and formidable nomadic Berber tribes began to move into the settled areas with ever-increasing pressure. It is not easy to say what happened, but we may imagine that some of the richer families fled into the better-protected coastlands, while others remained behind and came to terms with the newcomers, in the end merging with them and sharing with them their lands and the old skills learned from the Romans. Ghirza, like many of the other settlements, seems to have lasted on well into Islamic times, until its dikes were breeched or filled with silt and men no longer had the will or the ability to repair or rebuild them.

On the fringe of the pre-desert there is one lovely wadi, the Wadi Beni Ulid, where dike waterspreading farming has been maintained steadily from Roman times to the present day—where olives, which have disappeared from the other wadis, are still grown, and where, in good years, fine crops of barley are grown. This fine wadi, noted for the violence and volume of its spates, had continued to support a large population. For several miles on either side of the wadi there is a succession of Arab villages, in many of which may be discerned, like the core in an apple, the walls of Roman or early Berber fortified farms. But the desert which had claimed Ghirza for a victim also had a strangle hold upon Beni Ulid and was slowly closing in. Of the extensive old olive orchards below the town only the walls of stones that used to protect each tree remained. Silt had filled in level upstream with the tops of the old dikes across the wadi, and so they no longer held back ponds of flood water. Consequently, here too the olives were struggling for existence and the grain crops were uncertain and low in yield. Homes were crumbling in disrepair. American gift wheat was staving off hunger and starvation in the population, and those who could were moving out to take what little they could find among the crowded coastal villages. Beni Ulid was about ready to run up the white flag of surrender.

But just then, in true movie-plot fashion, a cloud of dust was seen in the distance, which represented the rescue party. In this case the party was an unromantic looking but purposeful group of agriculturists—Libyans, a New Zealander, and American Point IV specialists—who had the simple faith and professional pride that they could do what the Romans had done. They proposed to the people of Beni Ulid a project to rebuild the Roman dikes—bigger and better and more of them—and the people agreed that they could and should and would do it.

With no cash to start the project, American gift wheat was used to feed the families of the workers. Until wheel barrows could be delivered to the job the men rolled the stones forward or carried them upon their backs.

It was a pleasure to stand upon the hill and see that first dike of white limestone inch across the wide wadi bottom, the white of the limestone standing out in vivid

Figure 4. Quarrying building stone for new waterspreading dikes at Beni Ulid on the edge of the Libyan desert.

Figure 5. Wheeling stones to new dike. Completed dike in background.

contrast to the green of the new spring growth of annual grasses and barley. But the greatest thrill of all came weeks later when down the Wadi Beni Ulid late spring rains tumbled majestic torrents that surged over the new stone dikes from bank to bank but couldn't budge them. And then, after the flood waters rolled on, quiet pools remained behind the dikes to quench the thirsty soil and bring new hope into men's hearts whose progenitors for 1,500 years had been retreating before the encroaching desert.

If the ghosts of Marchius Nimmira or Flavius Isiguar or Annobal enjoy midnight strolls, perhaps they spend some moonlight nights in the fields of Beni Ulid discussing and disputing the dike-building techniques of American Point Four conservationists versus those of their own favorite Roman engineers. Perhaps these original Libyan farmers would be glad to know that at long last a newer generation has taken up man's eternal battle with the desert and is winning, with the same weapons, the fight they so successfully won so long ago.

Figure 6. The revived Roman art and science of water-spreading proves its worth in catching and spreading flood run-off waters at Beni Ulid. Water means food.

Figure 7. American Ambassador to Libya, John S. Tappin, keenly interested, inspects dikes with Point IV specialists and officials of the Libyan Government.

One year later Beni Ulid had a great feast. The American Ambassador to Libya, Mr. John Tappin, was the guest speaker, and what he said in effect was this:

"On my first visit here a year ago your olive trees were brown and sickly, your fields were dry, your animals were thin and many of your people were hungry. Today we see green olive orchards, fat livestock in fields of waving grass, stacks of barley and hay, people repairing their homes and garden walls. All of this is fine, and I rejoice with you. But the most precious thing which you have now that you didn't have then is Hope! You have proved to yourselves that you can roll back the desert, that you can restore with your own properly-guided efforts the prosperity and abundance that Beni Ulid enjoyed many hundreds of years ago. You have proved that you can master the flood waters of Wadi Beni Ulid and make them yield agricultural prosperity, and the lesson that you have learned and the hope that you have gained will be an inspiration to all your countrymen."

Figure 8. To the desert Arab, nothing is more joyous and wonderful than to catch and hold Nature's infrequent gift of water.

Water and Land Use Problems

J. E. WILLS

Water has no doubt been a factor in recent trends in land use in Illinois. The author confines his remarks to some generalizations about water and land use problems and to some ideas about the economics of irrigation in Illinois. His remarks are, of course, contingent upon the availability of water to irrigators.

WATER has always been an important factor in the consideration of land use problems. I believe that the early classification of land in the United States was based on natural water supply. Land was classified as *arid, semi-arid* or *humid*. We still use these designations.

Throughout the conservation program, water factors have been important considerations. Erosion control is a problem directly related to rainfall, the total amount of rain, the intensity with which it falls and the season. We become concerned with drainage (a water problem) and with conservation of the natural water supply, in part, through cultural and cropping practices. Water management is a major part of the conservation program.

About four years ago I read an article in a farm magazine. The author stated that he would risk his reputation on the prediction that, "within the next ten years," the Corn Belt farmer who is not equipped to supply supplemental irrigation to his crops will be a has-been. At the time I thought that this prediction failed to recognize adequately the problems that would affect the rate at which irrigation would, or could, develop in Illinois. Not knowing the author or his reputation, I did not know how much he was risking in making such a prediction.

Irrigation in Illinois is practiced largely to improve production already underway. This is in contrast to the situation in arid or semi-arid regions where a new kind of agriculture is created. From this we might anticipate that irrigation will have relatively little effect on land use change in Illinois, as measured by acreages of major crops.

Supplemental irrigation safeguards against drouths, increases yields, improves quality of product, provides earlier maturity, increases grazing capacity, and increases the response from other improved practices such as use of fertilizers. Through supplemental irrigation there is an increase in *control* over production. This is in accord with a trend in all areas of production (agricultural and non-agricultural) toward greater control over the quantity and quality of a product.

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To a large extent the application of technology to production processes is a matter of substitution of one resource for another. Machinery, fertilizer, or *water* are substituted for labor and land. This is one way to meet the needs of our increasing population.

Relationships Between Crops

Two crops may be complementary or competitive. When they are competitive, which is the more common relationship, the production of one crop can be increased only at the expense of a decrease in production of the other crop. This is called "product substitution" in production economics. Which of two cropping systems gives higher returns depends on the rates at which one crop substitutes for the other, and on prices of the two products. Within this framework I cannot predict how supplementary irrigation will affect Illinois farmers' choice of cropping systems. The specific question, for example, may be "does irrigation increase production and net returns for corn more than it does for legumes and grasses?" If it is corn, there will be a tendency to increase corn acreage at the expense of hay and pasture, assuming there is no change in price relationship, or vice versa for legumes and grasses.

Supplemental irrigation in the humid region, but outside of Illinois, could affect Illinois farmers' choice of crops. Some of the places where supplemental irrigation is apparently increasing most rapidly are in rice production in Arkansas and Louisiana, in potato production in Michigan, and in production of corn, particularly in western corn belt states, Nebraska and Kansas. One would not expect the rice and potato developments to have much if any effect on land use in Illinois. Irrigation of corn in the western corn belt could have some effect.

Irrigation in the humid area may be considered as either (1) a means of reducing risks of crop failure due to drouth or (2) as a regular integrated part of a farmer's year-to-year production program. Probably everyone would like to see yield variations evened out from year to year. To confuse the issue, however, I might point out that studies of yield and income variability in Illinois do not prove that farmers would be better off economically if variability alone were reduced—that is, without an increase in average yield. Of course risk would be reduced.

Personally I am less concerned about the emergency feature of irrigation (protection against severe drouth losses) than I am about the problem of integrating irrigation into our regular year-to-year farming programs. I would guess that many, if not most, of our farmers have considered the emergency aspects primarily, if not exclusively. May I cite as pertinent a case with which I am familiar. A good friend of mine, for many years an agricultural engineer in the extension service of a nearby state, decided about four years ago to forsake extension work for what appeared to be greener pastures in the commercial business of planning irrigation systems for farmers and selling them irrigation equipment. The first year of this venture was one of low rainfall. My friend's problem was getting the pumps, pipes and other necessary equipment, not in selling them. The next year rainfall in his area was normal. How many irrigation systems did he sell? Literally, not any. My friend finally went back to a salaried job.

Farmers need much more information and "know-how" to integrate irrigation as a regular practice. More information is needed on crop responses to varying irrigation rates and frequencies; relations to fertility levels, use of fertilizers, and soil types; and practical means to determine timing and rates of applying water. In all of this there are many challenges to agricultural workers.

I believe that supplementary irrigation has much to offer, and that it will increase in Illinois, but not at an explosive rate. How rapidly it will increase will depend on the weather, on farmers' income situation, and on how rapidly farmers, with the help of researchers, can solve the many problems involved.

CITY OF ASHEVILLE IN THE "LAND OF THE SKY" OF WESTERN NORTH CAROLINA. HERE THE SOIL CONSERVATION SOCIETY WILL MEET OCTOBER 19 THROUGH 22, 1958

Parrish Canyon, Utah: A Lesson in Flood Sources

RICHARD B. MARSTON

Figure 1. Parrish Canyon, left, and Centerville Canyon, right. Centerville Canyon has never produced a mud-rock flood in post-lake times, nor has an alluvial fan been built up below it. To the lower left, the farm area at the mouth of Parrish Creek was ravaged by four floods in 1930. Here boulders were deposited on the former lake bottom.

For 82 years the abundant clear water supplied by Parrish Creek contributed to the prosperity of Centerville, Utah, a little town 10 miles north of Salt Lake City. But in the summer of 1930 this creek went on a rampage that resulted in a series of four grinding, smashing mud-rock floods that deposited 329.9 acre feet of sediment within the town and on surrounding farms. This sediment ranged in size from fine soil particles to huge boulders weighing from 100 to 200 tons.

These summer floods were progressively devastating and paralyzing the southern part of Davis County. Local citizens appealed to Governor Dern for help. The governor appointed a special commission to study the county's flood problem and determine how it could be solved. The commission's report (1) showed that the fundamental cause of the floods was destruction of the plant cover on critical areas on and near the tops of the mountains directly above the Davis County towns.

A study (2) of the stream deposits in the area showed that these floods represented a radical departure from the sedimentation rate normal to Parrish Creek following the recession of Lake Bonneville, some 10,000 to 20,000 years before. The floods of 1930 carried great boulders 1,000 feet down a gradient of only 4 per cent and deposited them on fine-textured soils. If floods comparable to those in 1930 had occurred only once each century for the past 10,000 years, at least a 30,000-acre-foot alluvial fan would have been formed at the mouth of Parrish Creek. Because no such deposit exists, the sedimentation rate of 1930 was judged to be greatly accelerated.

What caused this great acceleration?

It has been reasoned that at least three conditions could cause accelerated erosion in such an area (3). One is diastrophism, which might increase stream gradients and cause them to degrade more rapidly. Another is

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sudden change in the amount and intensity of precipitation. A major decrease might lead to reduction in the plant cover, and thus expose denuded slopes to overland flow; or a great increase in precipitation might cause streams to degrade, at least for a short time. The third possible cause would be a change within the watershed that would alter the manner or amount of streamflow.

This last condition was determined to be the cause of the Parrish Canyon floods. Stream gradients had not been increased by crustal movements, and a study of the available records revealed no major change in amount of precipitation since settlement of the community. Obvious changes had occurred upon the watershed itself, however. Removal of vegetation almost to the point of obliteration on small areas in the head of the canyon, caused by heavy grazing, trampling, and burning, resulted in the creation of flood-source areas. No such flood-source areas were found in Centerville drainage, which is adjacent and similar to Parrish. Here grazing use had been moderate and the plant cover had not been altered (Fig. 1).

These findings led to development of a plan for gaining control of these watersheds, for treating the flood-source areas, restoring vegetal cover, and preventing the floods. The success of this restoration project is now widely known (4).

Unfortunately, only qualitative records are available for calculating the normal sedimentation rate from Parrish Creek during its preflood period. No quantitative records of precipitation, infiltration, or overland flow on the actual flood-source areas during periods of flood runoff are available.

To collect the kind of data needed for adequate study of precipitation and runoff, 16 plots were set out in the head of Parrish Canyon, and in 1936 measurements were started that would provide this information. Some plots were located in flood-source areas; others were in nearby nonflood-source areas that supported a forest of low, stunted aspen, *Populus tremuloides* (Michx.); these areas bore no signs of overland flow.

Information obtained from one of these aspen-covered plots, No. 7 (Fig. 2), is especially enlightening. A total of 34.08 inches of rain fell on the plots during the 11 summers 1936 through 1946. Of this total, only 0.07 inch was measured as overland flow in the catchment tank of plot 7, and no sediment was eroded.

After this 11-year period of observation and measurement, flood-source conditions were manually created on this plot in the spring of 1947. All vegetal cover was removed by cutting the aspen at ground level, raking up and removing the litter, and burning off the herbaceous plants with a weed burner. After the ground had been thus bared, a total of 42.23 inches of rain during the 11 summers after treatment (1947 through 1957) produced 4.56 inches of overland flow, and caused a soil loss of 0.67 area inch (Fig. 3). Converted to an average annual rate this equals production of 3.24 acre feet of sediment per square mile of watershed per year, a very high rate of sediment production.

The average annual sediment production rate just cited includes records from small gentle storms as well as large intense ones; but the large, high-intensity storms are chiefly responsible for mud-rock floods. Since removal of the vegetation, the highest sedimentation rate from plot 7 during one storm (July 10, 1950) was 5.49 acre feet per square mile. Total depth of precipitation was 0.70 inch and the maximum 5-minute intensity was 4.20 inches per hour.

Figure 2. Parrish Canyon runoff plot 7 as it appeared in 1939 prior to denudation in 1947. Understory vegetation thickened considerably following protection commencing in 1935.

Figure 3. Parrish Canyon runoff plot 7, June 1956. Barrels at right contain 240 cubic feet of sediment eroded from this 0.1-acre plot since it was denuded in 1947.

It is interesting to compare the record for this storm with that of a somewhat similar storm (July 10, 1936) that occurred before the plot was denuded, and to compare the records from plot 7 for both of the storms to those from a nearby plot that had revegetated after a period of denudation. Total precipitation in this 1936 storm was 1.14 inches, and its maximum 5-minute intensity was 5.04 inches per hour. Water in the overland flow collection tank for plot 7, which supported a protective cover of aspen and herbaceous vegetation at that time, amounted to only 0.005 inch (less than one-half of one per cent of the water that had fallen on the plot) and no sediment was eroded. By contrast, plot 6, which was in a flood-source condition at that time, yielded 0.462 inch of overland flow and sediment at the rate of 3.94 acre feet per square mile. Plot 7 was converted manually to flood-source condition three years before the second storm struck on July 10, 1950; plot 6 during this same time had revegetated naturally because it had been protected from fire and grazing. Records from the 1950 storm reflected the complete change in surface condition of both plots. Fifty-two per cent of the water ran off plot 7 carrying sediment at the rate of 5.49 acre feet per square mile of watershed, while only 5 per cent ran off plot 6 and no sediment was eroded (Fig. 4). This is quantitative proof of the efficacy of vegetal cover in preventing flood runoff.

It is concluded that the Parrish Creek drainage was in stable condition for many years before people settled near it. The normal rate of erosion while it was in this stable condition was low, probably not more than 0.0025 acre-foot of sediment per square mile of watershed per year. Heavy grazing and burning of the watershed slopes rendered them unstable and increased the sedimentation rate 1,000 times or more. On plots in the head of the canyon, sedimentation rates have been increased from zero to 5.49 acre feet per square mile of watershed during one storm, and decreased from 3.94 acre feet per square mile to zero during a similar storm by manipulation of the vegetal cover.

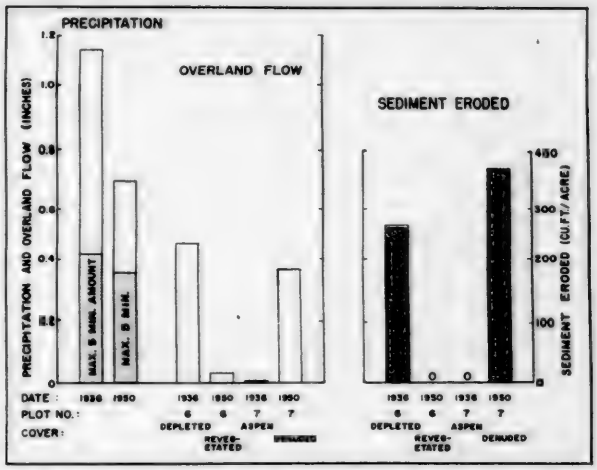

Figure 4. Differences in overland flow and sediment production from Parrish plots 6 and 7 resulting from two high-intensity summer storms on July 10, 1936, and July 10, 1950, under different cover conditions.

On steep slopes in this arid region an extremely delicate balance exists between climate, vegetation, and soil. Because the streamflow originating from these slopes is so valuable, any proposed use or harvesting of their vegetation must be so regulated that the hydrologic characteristics will remain normal, thus preventing accelerated soil erosion and destructive flood discharges.

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What's the Idea . . . of this Conservation Education Association?

CHARLES W. MATTISON

RECENTLY I was asked, "What's the idea of this Conservation Education Association? Aren't there already too many conservation organizations?"

That was a double-barrel question, but a most relevant one. And just in the event anyone else may have similar questions in mind I would like to answer them here. Let me answer the second part first. Do we have too many such organizations already?

I am one of those who doesn't think so. Sure, there are many conservation agencies and organizations in the United States. In fact after a little research I was able to list 78 nationwide, 20 regional and 236 statewide private conservation groups in the United States alone. Is that too many? Not in my book, it isn't.

Do they get in each other's way? I don't think so! Do they accomplish anything? Well, the results are on view in a well-informed public alert to the value of our natural resources and the need for taking care of them. Many things have contributed to this. However, in my opinion the private conservation groups can take a lot of credit for it.

Now to answer the first part of my friend's question, "What's the idea of this Conservation Education Association?"

How It Started

I am a charter member of the Conservation Education Association. Those of us who organized it had been working together for several years as active members of the National Committee on Policies in Conservation Education, formed by the Izaak Walton League of America in 1945. For eight years this Committee, composed of about 50 conservation-minded educators, conservationists, scientists and laymen had functioned vigorously. It had found a need for a more greatly united effort if we were to make real progress in education for the wise use of the natural resources. The organizing group had the Committee's experience to draw on in forming the new Association. The Committee had considered many things—

Was there a need for such an organization as the Conservation Education Association?

Could it carry on an effective program to help stimulate the teaching of conservation both in the schools and otherwise?

What would be the Association's purpose?

Would it be in competition with already strong and well-established conservation organizations?

In answering these questions, we were constantly aware of the many people—educators, conservationists and laymen—already actively engaged in conservation education in one form or another. Many were members of several conservation groups. But from everything we could learn, no one existing group served as a common meeting ground for their primary interest—*more and better teaching of the wise use of the natural resources in the schools and colleges.*

So the die was cast! The Association was established. The charter membership of around 30 paid members has grown to about 400 in the United States and Canada. *It is the only organized group in the world devoted exclusively to education for the conservation of the natural resources.*

The Objectives

Among the Association's objectives are:

- **To create sound conservation attitudes and habits through education**
- **To stimulate public recognition of the social, economic, and ethical aspects of conservation**
- **To impress the public with the necessity for immediate but sound conservation practices**
- **To encourage closer cooperation among all conservation organizations, for promoting sound conservation programs**
- **To develop effective conservation programs in schools, and with adult youth groups**
- **To encourage the training of teachers in conservation concepts, practices, teaching methods and techniques**
- **To provide leadership in forming conservation education policies**
- **To stimulate the production and use of accurate and understandable conservation teaching aids.**

Based on these objectives, the ultimate goal of the C.E.A.—whether in the schools or with adults—is action by every person to conserve the natural resources through protection, wise-use and making them fully productive. There is little point in concentrating on improvements

This article is based on an address by C. W. Mattison before the Northeast Wildlife Conference, Montreal, Canada, January 7, 1958. The JOURNAL is pleased to publish it as the first in a special series of articles dealing with conservation education efforts. C. W. Mattison is president of the CEA and is employed by the U. S. Forest Service, Washington, D. C., in its Information Division. Correspondence concerning CEA should be sent to him at 10014 Greenock Road, Silver Spring, Maryland.

of attitudes toward the natural resources unless those attitudes result in *action* to conserve properly those resources. *Everyone can do something,* depending upon the needs.

Four Steps to Understanding

What should we know about the natural resources before we can take intelligent action concerning them? There are four major understandings that are absolutely necessary.

The first of these is self-evident. *We must know what the natural resources are and understand that all of them —soil, water, forests (plants), wildlife and minerals— are interrelated.*

Following our ability to know and fully understand the natural resources we must learn just *how they affect us* —how they influence our day-to-day living—what they mean in our standard of living. As we proceed along this path of learning, we find that there can be no standard of living—in fact, there can be no life—without the natural resources.

At this point in our education, we should pause to reflect on the third essential part of our conservation knowledge—*what is the current condition of the respective resources; what will their productivity be in relation to the needs of expanding populations and economy and a continually rising standard of living.* We should begin to be disturbed because we will find that we are not yet giving the resources the care and protection needed to make them meet our expanding needs. Fortunately, we have made some progress; more and more of us are recognizing the needs and doing something about it. Many farmers are using soil and water conservation practices on their own lands; we are fortunate to have our great national forest system where 180 million acres of wildlands are under good management; under a tree-farm program a substantial acreage of private forest land in America has been put under management. Yes, there has been progress! But even so, millions of tons of topsoil and the land's fertility are still lost daily through erosion; wildlife management is handicapped by a widespread belief that protective laws and game farms are all that is needed to insure better hunting and fishing; many owners of small forests still fail to recognize timber as the profitable crop it is, thereby leaving a great part of our forest land on a slow production schedule; too many streams and rivers still are polluted and unfit for either human or industrial uses.

Finally, *we must know what conservation is and how it can be achieved.* Conservation in its true meaning is a very simple thing—it is the use, care and protection of the land and other natural resources so that their productivity will be guaranteed to the American people for all time. This definition recognizes "stewardship" as essential to conservation. It includes three principles— *"use," "care"* and *"protection"* which are the major principles involved in conservation. And it takes *everyone* to achieve it!

Some Accomplishments

It's mighty fine to have some lofty objectives but it's even finer to have done something to help reach those objectives. The C.E.A. is in that latter position—it *has* done things to stimulate and improve conservation education.

It has held four annual conservation education conferences. The first at the University of Wyoming, in 1954, considered "Teacher Training in Conservation" and analyzed the conservation content in curriculums of three widely separated teacher-training institutions. A summary of the Association's recommendations for training teachers in methods and techniques for teaching conservation includes:

I. Every teacher-education program in conservation should provide for the following:
   a. Acquaintance with natural resource problems and practices pertinent to local, state, national and world welfare.
   b. Training in the techniques of conservation teaching.
   c. Acquaintance with available public and private programs, services, and sources of information and assistance.
   d. Training in mass communications skills which will enable teachers to effectively convey knowledge relative to conservation principles and concepts.
   e. Training in integration of conservation subject matter into varied subject matter fields.
   f. Field experiences.

II. Mechanics of instruction in teacher education for conservation teaching should provide for the following:
   a. The ecological approach in the basic biological courses, the inclusion of field and laboratory practices, and attention to the appropriate season of the year.
   b. The ecological approach in basic social sciences to include field experiences and applications.
   c. The integration of conservation into all possible subject-matter fields, with particular emphasis in the general education courses.

III. In view of the rapid growth of outdoor education, school camping, and recreation programs, additional conservation content should be provided in those programs concerned with preparing leaders in these fields.

The Association believes that these essentials, when put into effect in teacher-education institutions, can result in a successful program of conservation teaching in our schools. Such conservation education will in turn develop a citizenry sufficiently aware of its environment to resolve, democratically, its natural resource problems.

The 1955 conference at Plymouth Teachers College, Plymouth, New Hampshire, developed recommendations for a "Plan for State Level Coordination in Conservation Education." Three States submitted summaries of their programs for the teaching of conservation in the public schools. After considering these, the conferees analyzed a plan for a coordinated Statewide conservation education program outlined by a special committee of the Association. They concluded that the major considerations in a State program of conservation education are: In-service teacher education; pre-service teacher education; curriculum revision and study guides; supervisory and consultant services; advisory functions of lay groups; cooperation with state and federal conservation agencies; techniques for evaluation and follow-up; and relation between outdoor and camping education and conservation education.

Then in 1956 at Clemson College, South Carolina, the conference theme was "What Are the Characteristics of a Good Conservation Education Program in a Local School System." Here the conference participants got right down to brass tacks; studied the conservation teaching of several school systems and agreed that in a good local school program:

1. School superintendents, principals, supervisors, and the board of education consider conservation education to be among the important areas of school responsibility. They recognize outstanding work, encourage teacher and community efforts, provide films, slide sets, booklets and other materials, and endorse first-hand experiences, such as field trips and conservation projects.
2. All teachers have a basic understanding of conservation and think of it as a way of vitalizing the curriculum. Each teacher accepts responsibility for phases of conservation appropriate to the grade level or areas he teaches. Local in-service training is continuously provided for all staff members and teachers themselves share in planning and carrying out such programs.
3. The school has the support and understanding of the community and the community is informed about the conservation education program of the school. The lay leadership of the community has considerable responsibility in developing and carrying out the conservation-education program of the school. This includes providing conservation educational facilities.

   The school utilizes available community resources, such as governmental agencies, private organizations, and industries, while recognizing that the major responsibility for the program rests with the school. Inventories of teaching resources and facilities of the community are developed and kept up-to-date with the help of the agencies, organizations, industries and individuals concerned.
4. Conservation permeates the entire school program. The program, directed toward meeting the needs of the area, starts with conservation problems of the community. The conservation problems and progress of larger areas, including their own and other states, the nation and other nations, are studied on basis of understandings gained about their own area.

   The school practices what it preaches, that is, it sets a good example in the use of resources both for itself and for the community. The program recognizes the needs and interests of children.
5. Local problems in which children have special interest are used as starting points in teaching. Teacher-pupil planning is characteristic of the teaching of conservation throughout the system. No matter which resource or problem is used as the starting point other resources are also studied through interrelationships of one resource to another.

   Adequate emphasis is placed on major conservation problems. Appropriate use is made of community and outdoor resources. First-hand experiences are used.
6. The adequacy and effectiveness of the entire conservation education program is constantly being evaluated. Pupil behavior and community responses should be among the criteria used for evaluation. Improved attitudes and behaviors are evident both in the school and in the community.

Looking Ahead—An Action Course

The 1957 Conference at the Michigan Conservation Training Camp, Higgins Lake, Michigan, charted an action course for the Association. It includes:

- Evaluation of new conservation teaching aids for factual and technical accuracy
- Expansion of the quarterly C.E.A. Newsletter
- Preparation and publication of a "How-to-do-it-in-Conservation Teaching" booklet for teachers
- Cooperation with state and regional conservation education groups
- Inclusion in the Newsletter of a "conservation teaching-aid-of-the-month." [The January, 1958, "aid" was the *SCSA* booklet, The Wonder of Water.]

- Assisting youth groups in activating conservation programs
- Cooperation with educators for inclusion of adequate conservation in the curriculum.

Committees will undertake the many activities upon which the C.E.A. will concentrate. There's a lot to be done but the Association has a lot of members who are willing to do that work.

The Conservation Education Association has high purpose and high resolve. It's in business to stay! While it recognizes that sound legislation is basic to sound national programs of conservation, it will not attempt to influence legislation. It does, however, carry on its program of education so that people will understand conservation needs and activities, and take the necessary action —personal, local, state or national—to conserve their natural resources through protection, wise-use, and making and keeping them fully productive.

Figure 1. Skill is needed to translate the art and science of soil and water conservation into regular school work. Many specialists are asked to work with teachers during special workshops and field trips. The CEA is concerned with how well we do this work.

Figure 2. ***(Below)*** **Each of these officers and directors of the CEA is a member of the *Soil Conservation Society*.**
Bottom row, l-r: **H. Michaud, Purdue University, Lafayette; W. F. Clark (Secy.-Treas.), E. Montana College of Educ., Billings; C. E. Mattison (President), U. S. Forest Service, Silver Spring, Md.; Ed Ray (Vice-Pres.), Michigan Cons. Dept., Roscommon; S. D. Mulaik (Vice-Pres.), University of Utah, Salt Lake City.**
Top row, l-r: **B. L. Ashbaugh, Md. Dept. of Res. & Educ., Annapolis; D. E. Wade, SCSA, Des Moines, Ia.; O. F. Capps, Mo. Cons. Comm., Jefferson City; R. R. Finlay, Ohio Dept. of Educ., Columbus; F. Schmeeckle, Wisc. State College, Stevens Point; J. L. Bailey, Tenn. Cons. Dept., Nashville.**

Changes in Cropping Systems

D. F. WILKEN

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CHANGES IN LAND USE, crop yields, fertilizer expenditures, and labor and capital requirements are noted from a sample of 600 farm records. Records are from farms of 180 to 340 acres in central and northern Illinois. The owners are cooperators in the Illinois Farm Bureau Farm Management Associations in cooperation with the University of Illinois, Department of Agricultural Economics.

TABLE 1
Summary of Certain Changes, 1950-1956

	Cattle-hog farms (per cent)	*Grain farms* (per cent)	*Dairy farms* (per cent)
Acres in corn	+10	+ 5	+12
Acres in soybeans	+ 3	+15	+ 4
Acres in small grain	—10	—20	—28
Acres in legumes and grasses	—10	—15	+ 1
Depreciable rock phosphate and limestone	— 4	—25	—20
Annual fertilizers	+50	+240	+ 1

TABLE 2
Percentage Change in Labor and Capital Requirements on Crops
(From detailed cost records northern and central Illinois 1951 to 1956, University of Illinois, Department of Agricultural Economics, Urbana, Illinois.)

Crop	*Tractor time* (hours)	*Labor* (hours)	*Capital* (dollars)	*Total cost* (dollars)	*Price received* (dollars)
Corn	—40	—33	+16	+27	— 4
Soybeans	—25	—37	+50	+21	— 7
Oats	—40	0	+75	+42	—17

Discussion

1. Livestock farmers have been shifting more of their good level land to high profit crops, mainly corn but also some soybeans. They have been reducing small grain acreage wherever possible and where large grain consuming livestock programs exist they have also reduced their legume and grass acreage. Rotations probably shifted on the larger, more level, livestock farms from a *C-C-O-leg* to a *C-C-SB-O-leg* system.

Total fertilizer purchases about doubled with a noticeable shift from depreciable materials to annual applications.

2. Grain farmers increased corn acreage sharply from 1950 to 1952 then dropped back by 1956 to about five per cent more acres than in 1950. Soybean acreage went up steadily 15 per cent with even greater increases on level farms. Oats and stand-over legumes have been reduced drastically to 15 to 20 per cent less than in 1950. Rotations probably shifted more to a *C-C-SB-W (scl)* from a *C-C-SB-O-Cl* system.

Annual fertilizers more than doubled in this period while depreciable applications decreased to about half the 1950 level.

3. Labor and tractor time on crops has dropped more than one-third in this period while capital requirements have nearly doubled. The total cost of production has gone up over 20 per cent while prices of corn, soybeans, and oats have dropped five to ten per cent.

4. These changes in cropping systems will probably continue in the future. As competition between regions becomes keener farmers tend to shift to the production of those crops for which their farm is best suited.

This means the larger, level farms will probably intensify their rotations while the smaller livestock farms on rolling land will maintain a *status quo*.

5. Corn yields were 30 per cent higher, soybean yields 10 per cent higher, and oat yields 10 per cent higher in 1956 than in 1950. (Part of the corn increase was due to very favorable crop year in 1956. The yields have increased steadily each year since 1950.)

6. If legumes and grasses are placed in a system where they displace long-run higher net income producing crops or higher net income producing combinations of crops and livestock, they become cost producing crops rather than high income producing crops. It takes skilled judgment and good economic interpretation to analyze each soil type and each individual farm to determine whether grass and legumes are costing the farmer or paying the farmer. Since costs are already high, "bad decisions" is a cost the farmer cannot afford. Determination of the best use of resources on each individual farm that will give the highest income to the farmer, the community and the nation requires skilled judgment and good economic interpretation. Economic facts are another tool to be used in getting soil and moisture conserving practices established on the land.

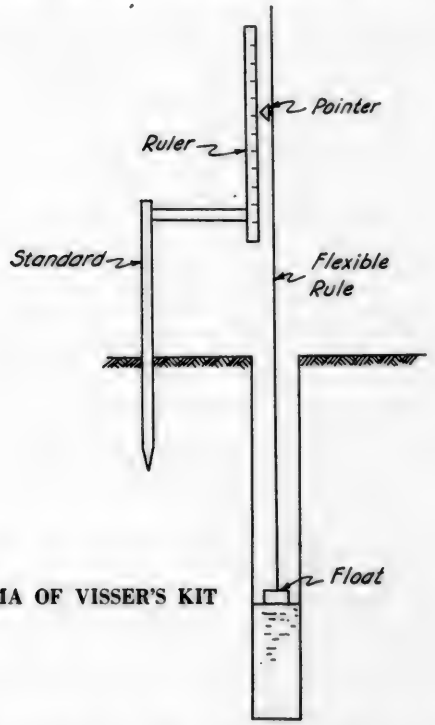
The Netherlands Equipment for Making Auger Hole Measurements

JOHN G. SUTTON

John G. Sutton is Drainage Engineer, Soil Conservation Service, Washington 25, D. C. *This article was prepared on request for the* JOURNAL *as there were a number of inquiries following publication of the Edelman and van Staveren article.*

Professor Dr. C. H. Edelman and Dr. J. M. van Staveren made an extensive trip to study wet soils in the Atlantic and Gulf Coastal States in the spring of 1957, described in the January 1958 issue of the JOURNAL OF SOIL AND WATER CONSERVATION. During this trip Dr. J. M. van Staveren demonstrated a kit for measuring soil permeability below the water table, developed by the late Professor W. C. Visser of the Netherlands.

The kit includes an open-type, 4-inch-diameter post hole auger; a standard which holds a vertical ruler directly above the hole; and a float to which is attached a flexible rule such as a tape measure with a pointer moving along the stationary ruler as the float rises in the auger hole *(see figure)*. A thin-walled pumping device, a well screen, and carrying case complete the kit.



SCHEMA OF VISSER'S KIT

The procedure for use is to bore a hole with the post hole auger to proposed drain depth, or at least 15 to 18 inches below the water table. When equilibrium with the surrounding groundwater is attained, the water should be lowered by the pumping device at least 12 inches, or at least one-fifth the depth of water in deep holes. In sandy soils a well screen is installed to prevent caving.

After the water is pumped out, the float is lowered into the hole and the pointed placed opposite the ruler. The water seeps into the hole, the float rises, and readings on the ruler are taken opposite the pointer at 5-, 10-, 15-, or 30-second intervals—depending on the rate of rise. The rate of rise is computed from these readings and may be quickly converted to permeability of the soil (hydraulic conductivity) by charts developed by Professor Visser.

In this country there has been increasing interest in the use of soil permeability measurements for design of subsurface drains during the last 15 years. Numerous articles have been published on the subject in such journals as *Agricultural Engineering* and *Soil Science*. The application to date has been chiefly in design of deeper drains for irrigated lands in western *United States*.

The use of equipment developed by the Netherlands should extend interest in this method to other sections of the country. The advantages of the Netherlands equipment are:

(a) Efficiency—as one man can make 10 to 20 sets of readings in one day.

(b) Quality and portability of complete kit.

(c) Completeness of kit and method, from drilling of hole to final computation of permeability by means of charts.

(d) The movement of pointer along the ruler permits uniform measurements of rates of rise and permits more accurate timing than by inserting a stick in the auger hole.

(e) The pumping device is well made and efficient.

(f) The open-type auger is especially designed for easy drilling in heavy soils.

"L'Homme Stupide"

ROGER HEIM

Roger Heim is a member of the French Institute and president, the International Union for the Conservation of Nature and Natural Resources. Are We Headed for Catastrophe? [L'Homme Stupide] is from the UNESCO Courier, January 1958, No. 1.

Dr. Heim will furnish dynamic leadership at the 6th General Assembly and the 7th Technical Sessions of the International Union for Conservation to be at Athens, Greece, September 10-23, 1958. The SCSA will be represented by Dr. Edward H. Graham, who is also serving as vice-president, Commission on Ecology, IUC. The Athens meeting will feature soil and water conservation and conservation education.

CHARLES RICHET, French physiologist and Nobel Prize winner, once published a tiny book called *L'Homme stupide* (The Stupidity of Man), the caustic title of which might well give us cause for reflection. Those of us to whom it was addressed could still find therein reasons for humility and a chance for improvement. For the fact is that mankind is brilliant and yet so stupid.

Brilliant, in being able to produce a number of exceptional individuals endowed with the spark of creation and whose genius has made possible the astounding progress of today, particularly in the field of science. Stupid, in being incapable of forethought, except where immediate and selfish interests are involved, and almost inept in avoiding major catastrophes. Today, enchained by the swarm of increasing populations, our planet is being plundered on an unimaginable scale while mankind races toward a destiny which it refuses to envisage.

It is not intended here to formulate a one-sided or philosophical critique of our era or of technical progress, but rather to look squarely at the things being done around us, at the facts and figures, on the one hand recalling the chain of causes, and on the other, their resounding repercussions.

The erosion of the soil has been going on for a long, long time; and yet, relatively speaking, it is a much more serious threat today than ever before. The ravages of the goat go back thousands of years; yet the tank and the bulldozer cause greater destruction and do so with greater swiftness. The clearing of land by fires has always been practiced in cultivation; yet the introduction of European methods of intensive farming has, in some cases, been even more harmful. Pollution has been a scourge for aeons; yet the atomic era is bringing it to us in another form. The stripping of our planet's top-soil, the deterioration of our capital of renewable resources, the shattering of the delicate balance of nature—all these are brutal events of weighty importance which, since they are all occurring at the same time, are the cause of the deepest concern.

The notion of the protection of nature has now given way to that of the conservation of renewable resources. The earlier notion contained an emotional, sentimental significance and its goals were disinterested, purely aesthetic, scientific and moral in nature. These are no longer priority considerations, for today our overpopulated world is hungry. What is of the utmost importance is no longer merely the knowledge and study of living species, their surroundings and habitat, or the respect which they should inspire, or the interest they might arouse, or even the protection which these species deserve, but rather the food supply of our rising generations.

The statistics stare us in the face; we must produce and produce more. Yet the gap between this accelerated production and world consumption widens every year. What a terrible price we must pay for this economic failure—the price of the destruction of what was once one of life's most beautiful mirages.

Are we then headed for catastrophe?

We have one last chance—if the power of education can overcome the power of ignorance. A rational population policy, a stop-and-arrest stand against the cancer of erosion, the adaption of cultivation to climate and soil, the preservation of renewable resources—all these depend upon education. It is our sincere hope that this issue will help UNESCO to defend the great cause of the conservation of nature which is has espoused.

Education is the forerunner to overcoming ignorance of the "cancer" of erosion and loss of soil fertility.

Shelterbelt Bears Fruit

SOME excellent photographs and a summary of how fruit-bearing shrubs and trees play an important part in promotion of shelterbelt plantings in the Great Plains were submitted by Karl F. Ziegler, work unit conservationist in Kingsbury county, South Dakota.

In 1957 about a third of the Kingsbury county farms had edible fruit species, largely as a result of cooperative planting programs by the U. S. Forest Service, Soil Conservation Service and district over the past 25 years. The South Dakota Department of Game, Fish and Parks has been responsible for about 8 per cent of the plantings in the past ten years.

Ziegler concludes a most interesting report by stating that "tree planting will continue in the Great Plains, its primary purpose being the control of wind and water erosion. However, it will be obvious what a farmer [and his wife] has in mind when he asks, *What kind of shrubs will I get in the windbreaks?*"

Figure 1. Sandcherry, American plum, and crabapple jellies, juices and jams await the family appetite. Mrs. Karl F. Ziegler tabulates a "test run" harvested from windbreaks.

Figure 2. Donald Bohn, SCS technician, examines a windfall of American plums on the Selmar Colby farm. It simply has been impossible for Colby and his neighbors to utilize all the fruit produced by this 4-year old row. A single shrub yielded up to half a bushel of fruit. The Kingsbury SCD (South Dakota) planted the windbreak, assisted by SCS technicians.

FIELD NOTE BRIEFS

METAL AGE TROUBLES

In the Stone Age, it really didn't matter too much if people strewed their stone junk and bone waste over the landscape. Today, veterinarians estimate that at least half the cattle in any given herd carry enough metal in their stomachs to cause damage. *Traumatic gastritis* (hardware disease or ironitis) is caused by bits of metal, nails, pieces of baling wire, staples, and other metal objects swallowed with feed. The animal's stomach is irritated, it goes off feed, and milk or beef production sags.

One company now has a *Magnatrap* which is forced into the animal's reticulum, lasts the life of the cow, and picks up metal. Metal particles then dissipate through oxidation.

All of this points out that anti-litterbugging isn't such a bad idea after all, and that we need to practice better housekeeping on the land.

SEARCH FOR ENERGY

Energetically Yours. 16 mm., sound and color, cartoon-style. 1958. Requests for free-loan copies should be directed to Standard Oil Company (N. J.), Room 1610, 30 Rockefeller Plaza, New York, 20, N.Y. Search for energy fuel to meet rising population demands. Without suitable fuels much modern, large-scale conservation farming and water management would not be possible under present standards of living in America.

WATERSHED MANAGEMENT PROGRAM AT CSU

A grant of $50,000 to help initiate a complete, full-fledged instruction and research program in watershed management —first of its kind in the United States— has been made to Colorado State University by the Charles Lathrop Pack Forestry Foundation.

The program calls for establishment on July 1, 1958, of a watershed management unit as an integral part of the College of Forestry and Range Management at the University.

Assistance will be given by the U. S. Forest Service through the Rocky Mountain Forest and Range Experiment Station which is headquartered on the campus.

Colorado State University now offers an option for an undergraduate major and a master's degree in watershed management in the college of forestry and range management. But under plans for the new unit, a separate undergraduate major will receive emphasis, the master's program will be strengthened and within a few years a doctorate study program in the field will be established.

President Morgan describes Colorado State University as particularly well situated as to geography and facilities for becoming a focal point for watershed management teaching and research. Reasons for this are outlined in the proposal to the foundation for establishment of the unit:

". . . (1) proximity to important mountain and plains watersheds, (2) the high priority being assigned to watersheds and their management in the Rocky Mountain area, (3) broad training being offered in natural resource management in the college of forestry and range management, (4) strong supporting work being offered in hydrology and soils in the departments of civil engineering and agronomy, and (5) the valuable cooperation of federal agencies such as the Rocky Mountain Forest and Range Experiment Station. . ."

A major facet of Colorado State University's new program is establishment of a Pack Professorship of Watershed Management. The holder will be leader of the watershed studies unit. One or more Pack Graduate Research Assistantships also are planned. Dr. Robert E. Dils, now associate professor of water resources at the University of Michigan, has been appointed to the chair. Dr. Dils is a member of the *Soil Conservation Society of America*. He will join the Colorado staff August 1.

Robert E. Dils, leader of the Watershed Unit.

A man to be assigned to the cooperative unit by the Rocky Mountain Forest and Range Experiment Station will help guide research. The station's facilities, including those at the headquarters in Fort Collins, field laboratories at Fraser and Manitou, Colorado, and Sierra Ancha and Fort Valley, Arizona, and alpine snow study areas in the central Rockies, will be available. University facilities include classrooms and laboratories on the campus and the Pingree Park Summer Camp and University forest lands in the nearby mountains.

At the Fraser Hydrologic laboratory, some of the outstanding watershed management research in the country has been pioneered. The problem in water conservation is manipulation of cover plants and management of land so as to regulate available water resources for the best use. Runoff curves show peak flow in May and June, with decreasing flow later in the summer when water needs are usually greater. Timber cutting practices, grazing practices, artificial treatments of snow to cause drifting or to retard melting and other practices can alter the quality of water yielded by mountain watersheds and change the runoff time patterns to advantage of water users while reducing flood hazards.

Those responsible for dealing with the complex problems involved in watershed management require training in many subjects, including engineering, biology, soils, ecology, geology and background in forest resource management.

EXTENSION EDUCATION PROGRESS

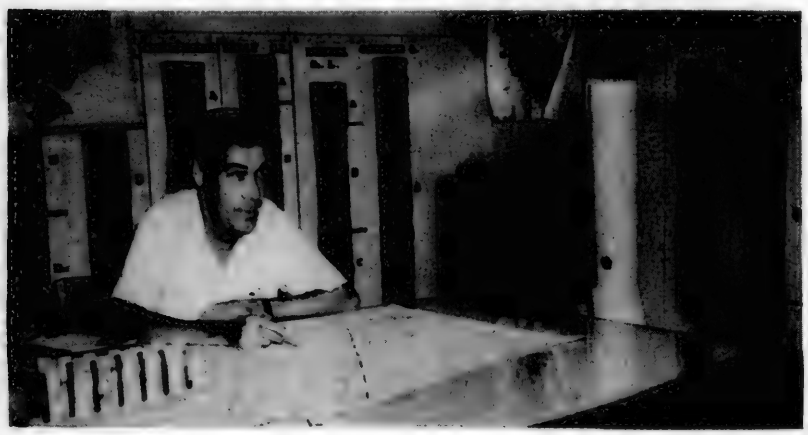
In Fairfax county, Virginia, daily records have been kept on requests for extension information. From staff study of these records a much clearer picture is derived of what people want and need.

For example, during one year (1956) the extension soils specialist answered some 1,600 calls from home-owners alone; many other calls came from land-use planners, tax assessors, school boards, realtors, contractors, etc. Information was needed on soils in relation to septic tank percolation, rating of soils for tax purposes, sites for homes, roads, schools, hospitals, airports, parks, cemeteries, gravel pits, landfills, etc.

In the Fairfax county office a permanent record is kept of each soil sample received along with results and recommendations.

As a result of the studies made in this one extension office, a much better idea is had for need of funds, personnel, equipment, and facilities needed to carry on an educational program.

Federal Extension Service soil scientist Clarence Coleman finds he has to answer thousands of inquiries annually. The people's needs and wants have been catalogued and analyzed over the years in this Extension office. Land-use trends and kinds of information can be planned for or predicted.



ESTUARINE DEVELOPMENTS

Estuarine developments have now progressed to a point along the South Atlantic and the Gulf of Mexico coasts to cause federal and state conservation agencies and others alarm.

Under the leadership of the Department of Interior, Fish and Wildlife Service acting on requests for suitable research and action from several private organizations and state agencies, an estuarine committee is being formed.

The problems of estuarine management are very involved and in part relate to upland soil and water management and use.

Additional details of this committee and projected plans for action can be obtained through the Fish and Wildlife Service, Washington 25, D.C.

NEW YORK WILDLIFE ACT

The State Legislature passed and Governor Harriman signed (April 28, 1957) a bill, giving the N. Y. State Conservation Dept. broad new authority in managing the wildlife resources of the Empire State.

Commonly referred to as the Wildlife Management Act, this legislation provides among other things **a statutory basis for a cooperative program of fish and wildlife management on private lands.**

The significant provisions of the law are built around the concept that problems of private land fish and game production and harvest can best be resolved on a local or district level.

WATER RESOURCES CENTER IN CALIFORNIA

The University of California will establish a new state-wide Water Resources Center for the purpose of providing a headquarters for its farflung, advanced research activities seeking answers to California's fast-growing water problems.

In announcing the plans, President Robert G. Sproul said that the Center's chief aims will be "to coordinate and stimulate initiative and to promote freedom of inquiry by individuals and research departments of the University in the problems of water resources development." In other words, the Center will serve as a clearing house for information and technical data on California water resources.

Announced at the same time was the appointment of Martin R. Huberty—a recognized authority on water supply and irrigation engineering problems—as director of the new Center. Huberty, a member of the University Staff since 1921, is presently serving as chairman of the Department of Irrigation of Soils at U.C.'s Los Angeles and Riverside campuses.

Operation of the Water Resources Center will be supervised by a coordinating board headed by the University vice-president, Agricultural Sciences. The faculty-administrative group will recommend university-wide policy on water research and will advise on the allocation of research funds to individuals, departments and cooperative projects. The Center will be located on one of the University's campuses and the director and his assistants will make up its permanent staff.

An advisory council of citizen leaders from public agencies and private organizations will be appointed to help guide the planning and development of the new water research program.

The University's research in water problems was accelerated last year as a result of a special appropriation from the California legislature. Under the direction of a University-wide committee on Research in Water Resources, a series of conferences was held covering such topics as ground water supply, sedimentation problems, recreational and industrial uses of water and the latest findings in hydrology.

Scientific investigations of the sources and uses of water are conducted on the University's campuses at Berkeley, Los Angeles, Davis, Riverside and LaJolla, and at field locations throughout the State. Among those participating are engineers, irrigation and soils specialists, meteorologists, economists, foresters and oceanographers.

MEASUREMENTS IN WATERSHEDS

Five years of soil and water conservation studies have been completed by the Iowa Experiment Station in 10 watersheds in the loess area of western Iowa. These watersheds—which vary in size from 50 to 1,400 acres—are located in the basins of the Little Sioux and Soldier rivers. Several of the watersheds have been treated under the Little Sioux Flood Control Program.

Agricultural engineers have measured both rainfall and runoff in the watersheds. Recording gauges are maintained throughout the growing season, from about April 15 to October 15.

Several severe storms have occurred in the watersheds during the 5 years of study. The most severe occurred on June 17, 1951. On the Nepper watershed southwest of Mapleton, 4½ inches of rain fell in 75 minutes. Other studies have indicated that a storm this severe occurs at any one location only about once in 100 years on the average. Several other storms of about a 50-year recurrence were recorded during the 5 years.

These severe rains accounted for about 70 per cent of the soil losses where measurements of silt in reservoirs were made. Losses of from 20 to 40 tons per acre resulted from the June 1951 storm. A loss of 40 tons per acre represents about ¼ inch of soil over the whole watershed.

Records such as these for watersheds where various methods of soil and water control are used and where no control is used make possible better engineering design on waterways and water-control structures.

These studies are continuing under the direction of H. P. Johnson, R. K. Frevert and G. O. Schwab, Experiment Station, Ames, Iowa.

TOMORROW'S LEADERS AT CONSERVATION CAMP

The inheritance of a 100 acre farm the second day of conservation camp at Camp Ohio the summer of 1957 caused some youth campers to think, other to laugh and still others to become curious.

Curiosity and coming face to face with a farm which has real problems were the techniques used. Some 160 campers (two from each of Ohio's counties) between the ages of 16 and 21 seriously considered the resources and their management on a 100 acre farm presented them by a make-believe banker.

Three days of the one-week camp were devoted to giving each group of four campers, usually two girls and two boys, a set of maps covering a farm adjoining the camp and developing a complete conservation plan for the farm.

Campers first tour the farm and outline their maps and make notes of existing problems. The next step is accomplished by conducting elective discussion sessions in forestry, soil, water, and wildlife.

A large part of the teaching is done by demonstration or illustration. Each group of four color their soils map after soils, land capability and hazards are explained.

Each group is then asked to develop a plan for the farm as though they were the owners.

The climax comes when several groups are called upon to present their plan and ideas to the entire camp.

Several campers are sponsored by their local Soil Conservation District. Several Districts have the campers as speakers on their annual meeting program.

Interest in the camp has grown to where competition exists within most counties for selection to attend.

Fred Bruny, Ohio Extension Service Assistant 4-H Leader, directs the camp.

PLANNING IN PANAMA

Plans are progressing and work is being done on building and improving the highways in and adjacent to the Republic of Panama. The new highways will open up timber land which has not been accessible from present highways or from the rivers and coast.

Indiscriminate logging and clearing can have various bad effects. The most obvious is that valuable trees are used up without replacing them, thus depleting natural resources of the country. Also serious is that, when the trees are removed, the heavy rains may carry away the soil and ruin the land. In extreme cases the land may become so eroded by gullies that it can never be reclaimed for any useful purpose.

The present and contemplated expansion of the country's highway system will open up more forest areas, increasing the necessity and urgency for good planning, legislation and action both to conserve natural resources and to develop industries based on these natural resources.

CHAPTERS ARE "ON THE BEAM"

It is a real thrill to report that our chapters, nation-wide, are "On the Beam" in our Chapters Activities program. Thanks to the fine leadership of the Regional Council members and the Activities Committee representatives in these areas. We will have a fine report to send back to the chapters after the Asheville meeting.

All chapters are encouraged to check the program of the annual meeting of the *Society*, and note that we are planning a delegate meeting Sunday night, October 19, to share and discuss successes and problems in promoting and maintaining "Active Chapters." This is a meeting to which every chapter will want to send at least one official delegate.

May I remind the chapters in behalf of our regional committeemen of two things:

1. Remember to get your chapter's activity entry in to your Regional Representative before August 1, 1958.

2. Plan now to be represented at the "chapter delegate session" on Sunday night, October 19, at Asheville by selecting a delegate early. Notify your Regional Representative of the Chapters Activities Committee who your delegate will be. We will be looking for him. Have him come prepared to "give" as well as "receive" from this conference on chapter activities.

The regions having the highest per cent of participation among chapters in both (1) the Chapter Activities Contest, and (2) the delegate session at the National meeting, will be appropriately recognized at the National meeting and in the JOURNAL.

The only way in which a chapter can lose in either one or both of these activities is "to not participate." Let's be a winner. Will see you at Asheville.—INGVALD O. HEMBRE, *Chairman, National Chapters Activities Committee.*

RESOURCES FOR THE FUTURE. *Annual Report, 1957. 1145 19th Street N.W., Washington 6, D. C. 89 pages, illustrated. 1957. Free. (Reviewed by* LAWRENCE G. HINES, *Hanover, New Hampshire.)*

The Ford Foundation has been described as a large sum of money surrounded by people who want some of it. Resources for the Future, Inc., a financially-dependent offspring of the Ford Foundation, was established in 1954 as the sponsor of the Mid-Century Conference on Resources and has continued to subsidize a variety of undertakings in the study of natural resource problems. RFF has sponsored training programs and seminars and has made grants for independent research at the same time that it has carried on staff studies. In the multiplicity of its activities, RFF is peculiar among the foundations and foundation-created agencies: It apparently helps to determine its share of the Ford grant as well as that which is distributed among grantees. Although foundations are legally private corporations, the nonprofit feature of such organizations—as well as the implicit intent of the founder—generally confers the special characteristic of being "affected with the public interest." Moreover, because of its dual role of benefactor and grantee of the Ford largess, RFF is under particular obligation to present a clear statement of its research objectives, an independent (non-staff) appraisal of its staff accomplishments, and a comprehensive account of grant projects.

In an attempt to explain its research objectives, the *RFF Annual Report* prefaces a review of the year's undertakings with an article entitled "Research for What?" Although this essay consists in the main of an extremely loose and discursive consideration of the role of research in general, it includes the following specification of RFF's research interest:

> The Resources for the Future program is problem oriented. The strategy of our efforts to enlarge understanding of the role of natural resources in the growth of the American economy and the welfare of the American people is to start with a basic and critical problem, stated usually in economic, political, or social terms, and then to pursue it by means of research, fundamental or applied as may be indicated. Most of our research so far has been primarily in the social sciences, although occasionally related studies in natural science and engineering have been supported. More frequently than not, research has been coupled with graduate and professional education in seminars, research team projects, or through fellowship-type grants. (P. 3).

Resources for the Future is concerned that its research have an influence on policy; in fact it frames the statement of the problems it addresses and actually designs its research projects to provide a firmer foundation for the decisions of policy makers. (P. 5). . . . We are not enamored with the notion of research for research's sake. . . . (P. 8).

The emphasis upon "economic growth" and "welfare" indicates an acceptance of the currently popular goals of economic activity, but these objectives are so broad that almost any research may be considered relevant. The concentration upon policy-influencing studies is somewhat more difficult to understand. How is a research project specially designed so that it will influence policy decisions—other than through the choice of the topic for investigation. Aren't all studies that yield significant information likely in some degree to influence policy decisions? It is true that some studies employ highly abstract approaches to essentially artificial problems, but this is not likely to occur in such a pragmatic field as that of natural resources. In short, the contention of RFF that it is "not enamored with the notion of research for research's sake" appears to be an ill-conceived straw man. Who is so enamored? The danger of this kind of talk is that it may be interpreted as a covert announcement that those interested in basic, theoretical research need not apply. This would be a questionable policy for a foundation-sponsored research organization to adopt in view of the decreasing attention to basic research in recent years.

"Research for What?" fails to explain clearly the research objectives of RFF. Its goals are not rigorously defined and it seeks to serve a number of conflicting ends. Moreover, the *Report* tends to rely on non-specific cliches rather than explicit statements. For example, RFF seeks to "probe deeply," concern itself with "real resource problems" and exert a "constructive influence" on the policy makers in government and "in the councils of business, labor, and agriculture."

Although "Research for What?" is not a clear statement of RFF's research objectives, the Table of Contents of the *Annual Report* indicates the areas of its research interest: Water Resources, Energy and Minerals, Land Use and Management, Regional Studies, Resources and

National Growth, Resource Education, and Special Studies. In reviewing the accomplishments during 1947 in water resources research, an arresting claim is made for "A New Type of Economic Analysis of Some Much-debated Problems" in connection with a study of multiple purpose river development. A careful reading of this section reveals, however, that the "new" type of economic analysis refers to an unpublished study that measures the cost of government (water) projects in terms of the social disutility of taxes! After this denouement, the observation that the results of the investigation indicate that the social cost of capital raised by federal taxes is higher than the federal borrowing rate seems mild—even though the statement is supported by evidence.

Other parts of the Annual Report conform more closely to accepted journalistic practices, if not the scholarly conservatism of a foundation report. The section on Energy and Minerals is a brief, factual progress report on research underway and work completed, but the explanation of "How RFF Is Studying Energy Needs and Resources," while informative, is excessively padded with simple historical data. The recreational uses and resources project, although primarily factual, represents a much-needed and worthwhile undertaking. The investigation of wilderness areas offers a challenging and important opportunity for research and the historical study of national park policy should contribute significantly to our knowledge in this field.

In cases where independent research grants have been made, RFF has followed a highly commendable policy. Unlike most of the large foundations and their subsidiaries, RFF has made grants for individual as well as project research. Unfortunately, support of independent research is small relative to staff projects. In 1957 RFF had total expenditures of $631,939, of which the allocation for grants and research agreements was $96,940 in comparison with staff and administrative expenditures of $534,999. In view of relative costs and availability of research talent—and on the basis of apparent staff accomplishments—efficiency might be greatly enhanced by reversing the allocations of funds for staff and independent research.

DRY FARMING IN THE NORTHERN GREAT PLAINS, 1900-1925. *By* MARY WILMA M. HARGREAVES. *Harvard University Press, Cambridge, Mass. 578 pages, indexed, illus., summarized. 1957. $10.00. (Reviewed by* HAROLD W. COOPER, *Bozeman, Montana.)*

This is a history of agricultural settlement of eastern Montana and western Dakotas as reflected in many varied documents recording early development of the area. The author seems to have reviewed every conceivable source of written record. The book is exceptionally well documented. It is organized in three sections which include background, the dry farming movement, and dry land settlement.

The difficulties encountered by settlers are described. Recurrent drought, transportation, uncertain distant markets, scarcities of wood and water were major problems encountered.

The efforts for broad development as reflected in Congressional actions, local and national propaganda, and actions by private interests and railroads are presented and analyzed.

Mistaken concepts of the period as to the effects of plowing on climate, ways to dry farm, what constituted a family size farm, etc. are listed as having influenced homesteading and abandonment. Conflicts between the "practical farmers" and researchers as to ways to dry farm are recorded.

The process of settlement is described; which areas developed first, volume, farming methods, costs, are documented.

The layman will find this book dull at times and somewhat repetitious. The student of history of the area and the semi-arid land economist will find in this thorough study a world of information.

Mrs. Hargreaves is on the research staff of the University of Kentucky as associate editor of The Henry Clay Papers. This book is 101 in the Harvard Economics Studies.

FRANKLIN D. ROOSEVELT AND CONSERVATION—1911-1945. *2 vols. Compiled and edited by* EDGAR B. NIXON. *614 plus 700 pp. 1957. Supt. of Documents, U. S. Government Printing Office, Washington 25, D. C. $9.50. (Reviewed by* CHARLES H. STODDARD, *Washington, D. C.)*

The public and private papers of a leading public figure often reveal insights into his personal interests and significant accomplishments which too frequently escape issue-oriented historians. This is particularly true of this 1300 page collection of Franklin D. Roosevelt's papers on forestry, soil, water and wildlife and park conservation and natural resource planning. Furthermore, this reviewer will venture to predict: Among the most enduring and tangible monuments to Franklin Roosevelt and the New Deal, his far-reaching accomplishments in conservation will rank close to the top.

There is an underlying reason for Roosevelt's broad interest in natural resource problems: He was a countryman at heart. He had what Aldo Leopold has called "an ecological conscience." Many pages of his letters, conference reports and written speeches, reveal a man with an earthy awareness of trees, wild things and a "feel" for the land—not only as a sentimentalist, but as a practical realist. Only a man who had reforested his own acres

with tree species he himself had carefully chosen and who had watched them grow, would have the vision needed to create and stoutly defend a national reforestation program so that unemployed city boys might have similar experiences in the Civilian Conservation Corps. Only a man who had practiced forest conservation himself could lecture like a schoolmaster on the technical details of CCC camp work to his press conference eleven days after taking office. Only a man who knew his American land and was both an idealist and a political realist with imagination could have translated this knowledge into a vast body of solid accomplishment.

These volumes do not include any of Roosevelt's papers on public power nor reclamation except insofar as they were related to the general field of resource planning. Presumably, papers on TVA, REA and other water developments will be included in another collection. There is much evidence to indicate that he was primarily interested in integrated management of resources—particularly river basin and regional resources planning. The TVA and the National Resources Planning Board were pioneering efforts in this respect.

His conservation programs were established largely during F.D.R.'s first and second administration before World War II. The impact of their sheer numbers cannot be appreciated without a listing of the highlights: Establishment of the Soil Conservation Service; establishment of 159 new National Wildlife Refuges; establishment of King's Canyon, Great Smoky and Isle Royale National Parks and a number of National Monuments; the Taylor Grazing Act of 1934; the Duck Stamp, Pittman-Robertson and Wildlife Coordination Acts (all landmarks in wildlife conservation), Quetico-Superior Wilderness Committee; expansion of the National Forests by 13 million acres; the Plains Shelterbelt; and the Norris-Doxey Farm Forestry Act. There are many other major forward steps in existing programs which had received no forward push for years.

Roosevelt's personal interest in conservation was fertile ground for early leadership in conservation policy when, as State Senator in Albany, he sponsored the Roosevelt-Jones Wildlife Protection Bill. His first real scrape with Al Smith came in 1931 over the Reforestation Amendment (designed to retire and reforest submarginal New York State lands) when Smith opposed it as being unnecessary. (It was approved by a large majority of voters.) These early experiences were fostered and encouraged by his personal friendship with Gifford Pinchot as early as 1911. On many occasions during his career F.D.R. sought out and used some of Pinchot's advice on forestry matters. And it is of interest to note that Pinchot and F.D.R. were planning a World Conference on Conservation shortly before the latter's death.

Students of public policy have often noted that the only two great forward strides in conservation took place under the two Roosevelts—both countrymen with a personal interest in the outdoors. But whereas the first Roosevelt had the interest and political drive to put over new programs, the ideas behind them were largely those of Pinchot and others. These papers clearly reveal that many of the basic ideas in the New Deal conservation programs were those of the President himself and that he inspired others to give them the details needed.

It should be a matter of some concern to the conservation movement of the United States that presidential leadership of a special quality has been needed to make progress—men whose backgrounds include a personal interest in problems of the land. This is a matter of concern because it is quite possible that an increasing number of our future political leaders will be drawn from those who have had direct contact with resource problems. This dilemma has made itself painfully apparent during the last five years when attempt after attempt has been made to turn back and over turn many painfully-won conservation gains.

As a participant in several New Deal conservation programs beginning with a job as a forestry foreman in a CCC camp during college years, this reviewer felt that he had a reasonably detailed knowedge of conservation in the New Deal; but these two volumes open up many new insights into Roosevelt the man, Roosevelt the political leader, and Roosevelt the conservationist, which will be instructive to both the professional as well as to lay conservationists. No historian of the 1930's henceforth can afford to overlook this dynamic and lasting chapter of our history.

ANNOUNCEMENTS OF MEETINGS

The Fifth National Watershed Congress will be held at the Statler-Hilton Hotel in Dallas, Texas, September 29-October 1, 1958. The theme of this Congress will be "Meeting People's Need by Watershed Development."

Topics for seven major panels are:

1. The still urgent need for a land and water policy. 2. Federal agency conflicts in programs, practices, and policies. 3. Maximum benefits in watershed developments. 4. Cities are in watershed too. 5. Need for clean water. 6. The need for more treatment on the land. 7. Progress and problems in watershed development.

Strong committees have been selected to summarize and present concise statements on each of these panels. From advanced statements this 5th Watershed Congress should be one of the best to date.

Western States Water and Power Consumers Conference will meet in Denver, August 28, 1958. In large part the meeting will commemorate the Conference of Governors called by President Theodore Roosevelt in May, 1908

Illinois statewide water supply conference on water pollution abatement will be held in Chicago at the Sherman Hotel on August 27.

Literature Briefs

Fertilizing Forest Lands. By Dr. Takeo Shibamoto. 35 pages, illustrated.

According to the "Foreword": This booklet has been translated from the Japanese and published in the United States in the interests of sound forestry practices . . . as a thought-provoking presentation of silvicultural research."

Dr. Shibamoto is professor of forestry at Tokyo University.

A copy may be obtained free of charge by writing to Dr. E. D. Crittenden, Director of Research, Nitrogen Division, Allied Chemical anl Dye Corporation, 40 Rector St., New York 6, N. Y.

Soil Fertility and Biotic Geography by William A. Albrecht is a 20 page reprint from The Geographical Review, Vol. XLVII, No. 1, 1957, pp. 86-105 (American Geographical Society, Broadway at 156th St., New York, N. Y.)

Dr. Albrecht brings together in this intriguing essay the results of many years of research and contemplation about soil fertility. He points out that "at the present time, only 30 per cent of the production of major crops results from fertility applied to the soil; 70 per cent represents exploitation and a very small return to the soil of the food- and feed-creating capital removed from it."

Summary of Research Experience with Stubblemulch Farming in the Western States. 1957. 56 pp. illus. Supt. of Documents, Gov't. Printing Office, Washington 25, D.C. 30c.

A summary of experiments dealing with stubblemulch tillage in the Western States. Interpretations related to erosion control, runoff control, and crop yields.

Fifty Years of Industrial Forestry: The Empire State Forest Products Association. N. C. Brown and A. B. Recknagel. Proceedings, Society of American Foresters, 1957, pp. 86-89. (Reprint copies presumably can be obtained from the authors, c/o Cornell University, Ithaca, N.Y. or the ESFPA, Syracuse, N.Y.)

Group Leadership in Staff Training. 1957. 182 pp. Supt. of Documents, Gov't. Printing Office, Washington 25, D. C. 55c.

Offers group leaders guidance in many types of programs and working toward a variety of objectives. Problems are identified and the framework of concepts used for meeting them are given.

Wetland Acquisition. By Harold C. Jordahl. Wisconsin Conservation Bulletin, Vol. 23, No. 4, pp. 3-10. (Wisconsin Conservation Dept., Madison 1, Wisconsin.)

A brief historical review and policy statement on wetland preservation, restoration and management. It is estimated from available records and surveys that more than 2½ million acres of Wisconsin wetlands have, over the years, been affected by drainage. In areas of intensive agricultural activity, the few remaining wet pockets of vegetation represent virtually the last remaining stable wildlife habitat. To date the State Conservation department has established 130 acquisition projects, acquired over 151,000 acres at a purchase cost of $2,028,000.

Drainage Areas of Iowa Streams by O. J. Larimer. Prepared by U. S. Geological Survey, Water Resources Division in cooperation with the Iowa State Highway Commission. Bull. No. 7, Iowa Highway Research Board, Ames, Iowa. 439 pp., 102 figures. 1957. No price given.

"The drainage area of a stream at specific location ordinarily may be defined as that area, measured in a horizontal plane, which is enclosed by a topographical divide such that direct surface runoff from precipitation would drain by gravity into the river basin above the specified point.

"One of the most important factors in the hydrologic computation for the design of structures on or over watercourses is the drainage area upstream from the point under consideration. Other hydrologic studies such as low-flow, flood-frequency analyses, rainfall-runoff correlations, stream density, and area-distance make use of this factor as a basic premise for computation."

In this report the drainage areas of all Iowa streams in excess of 5 square miles are listed.

The Fishes of Ohio by Milton B. Trautman. Published by the Ohio State University Press, Columbus 10, Ohio, 700 pages (7⅞ x 10¾ inches). Contains 7 full-page color plates showing 21 species of fishes. There are more than 800 black and white illustrations. They include 190 detailed original drawings of fishes to scale and 172 distribution maps. $6.50.

Includes technical keys for identification of fishes in Ohio and many species in neighboring states. Has chapters on common and scientific names of fishes, fish hybridization, collecting and preserving fish, *changes in land use and stream conditions since 1750.*

This long-awaited treatise may be of interest to the technically-minded, advanced angler as well as the fishery scientist. It's a fine record of an outstanding naturalist's life-long devotion to a goal.

Deer and Aspen is a 16-page booklet illustrated in full color, issued by the American Box Board Co., Filer City, Michigan. (Not dated.)

This well prepared booklet points up some relationships of past and present land-use to deer in Michigan. Specifically it deals with deer and aspen browse. The conclusion stated is: "By knowing [the facts presented in this booklet] you will realize the need for supporting a program that will keep the deer herd in balance with the food supply."

Wildlife men and foresters have congratulated the American Box Board Company for an excellent graphic and objective presentation.

The company is dependent upon a continuous supply of aspen.

Problems of land and water use are usually not simple to solve even though the facts may be startlingly clear. "Communication" with and "education" of the public are necessary steps in reaching solutions. Various approaches must be tried.

Natural history (ecology), applied ecology (management), history, land-use economics, sociology and politics are involved.

Deer and Aspen was one approach that may have been effective. However, we do not know if any evaluations have been made. Such evaluations should be made independently by educational specialists.

What We Get from Forest Land is a very attractive 40 x 28 inch chart in color released in May by the U. S. Forest Service.

This chart is a companion teaching aid to *What We Get from Trees.* Teachers may obtain single copies free from the Forest Service, Washington 25, D. C. Additional copies can be purchased at 20c each from the Supt. of Documents, Government Printing Office, Washington 25, D. C.

Urban Renewal is an order slip and description of 8 publications on the subject. Form can be obtained free from Gov't. Printing Office, Supt. of Documents, Washington 25, D. C.

Report on the 1957 Conservation Workshop. Guilbert R. Graham, Geology and Geography Dept., University of South Carolina, Columbia, S. C. 24 pp. (1958). Can be obtained from the author.

Reports of this kind should receive good distribution among states conducting conservation education training for teachers. Soil and water conservationists were most active in cooperating in this South Carolina workshop. This report should be of particular value to educators and teachers in South Carolina as it contains much useful, up-to-date information.

Owyhee: The Life of a Northern Desert. By Earl J. Larrison. 1957. 357 pp., illus. by Don Fritts, indexed, end piece maps of Owyhee County, Idaho. The Caxton Printers, Ltd., Caldwell, Idaho. $5.00.

Prof. Larrison teaches zoology at the University of Idaho. This is the third "ecological" study he has published in book form. He co-authored *Pilchuck: the Life of a Mountain*, and *Union Bay: the Life of a City* Marsh (Seattle). Larrison makes effective use of the narrative form of description and tells the story through fictional (but typical) characters. Larrison and his cohorts are making a fine contribution to the literature that deals with the study and interpretation of land and water areas.

The New Way of the Wilderness. By Calvin Rutstrum. 1958. 276 pp., illus., indexed. The Macmillan Company, 60 5th Ave., New York 11, N. Y. $4.50.

Rutstrum is a self-taught man and has written a book of considerable use to all who must live, work or engage in recreation in the out-of-doors, especially the more remote places removed from civilization. He covers all seasons and all modes of travel, including travel by aluminum canoe, car, and plane. One of the top publications of its kind now available.

Materials for Teaching Conservation and Resource-Use, a 55-page bulletin, has been prepared by the National Association of Biology Teachers and is now available for 35 cents from Interstate Printers and Publishers, Inc., Danville, Illinois.

The bulletin includes listings of free and inexpensive materials from state and national agencies, selected references, films and film strips.

The new materials listed in this bulletin were assembled as the appendix of the *Handbook for Teaching Conservation and Resource-Use*, reprinted in January by the Conservation Committee of the National Association of Biology Teachers. The Conservation Handbook of 500 pages is also available from Interstate Printers and Publishers for $4.50, with educational discounts available to schools and teachers. *Society* member Richard L. Weaver edited the handbook.

Noxious Weed Control and Brush Management in Wisconsin. Issued by the Natural Resources Committee of State Agencies. 23 pp., illus. (Copy can probably be obtained through the Wisconsin Conservation Department, Madison 1, Wisconsin. No price given.)

This is an excellent publication and most unique in that some ten agencies involving at least 16 divisions thereof were able to produce it jointly and with agreement. It is through such cooperative efforts that many phases of land and water use move forward. In this case the conclusion is drawn (p. 21) that "future agricultural, conservation and highway programs can be greatly affected by the emphasis placed upon proper weed control and brush management programs."

Two of the editors, Cyril Kabat and Ruth L. Hine are members of the SCSA.

Outdoor Education for American Youth. Prepared by AAHPER Committee under chairmanship of Julian W. Smith. 150 pages, illus., appendix, entitled, Resources. 1957. American Assoc. for Health, Physical Education, and Recreation, 1201 16th Street N.W., Washington 6, D. C. $2.50.

Some 38 persons, many well-known conservationists, have prepared this "guide" to improved outdoor education.

Although the writing is unduly wordy in spots, this book is a notable contribution.

Workers involved technically in conservation of natural resources are more and more frequently called upon to donate time to conservation education and outdoor efforts.

Administrators and technicians who would desire to improve their understanding of the problems involved in outdoor education—especially as related to natural resource use—would do well to own a copy of this book.

Outdoor education and conservation education are a most happy alliance now being given due recognition.

Conservation in Camping. American Camping Association. Bradford Woods, Martinsville, Indiana. 1958, 15 pp., mimeographed.

A summary of discussions during a regional American Camping Association conference.

National Audubon Camps

On many occasions, *SCSA* members are asked about summer camps or conservation education training centers for teachers and youth leaders. In addition to many state institution-run camps or workshops, there are four very excellent camps conducted by the National Audubon Society, 1130 Fifth Ave., New York 28, N. Y. The camps are located in Maine, Connecticut, California and Wisconsin. Descriptive brochures can be obtained by writing the New York office of the Audubon Society.

Booklets Available

Caterpillar Tractor Company, Peoria, Illinois, offers several illustrated booklets which can be obtained on request from the Peoria office or through dealers: "Conservation Work for the Conservation Contractor" and "Your Share in the Small Watershed Program." A mimeographed talk on "Agribusiness 1958" by J. E. McBride is also available. Caterpillar has recently engaged in developing several 2 x 2 inch color slide presentations on small watersheds. Details on these can be obtained through the Peoria office.

Conservation Caravan in N. Y.

The Conservation Forum of New York State will conduct its 10th Conservation Caravan, August 23 to 30. Full details of the Caravan program and costs can be obtained by writing Miss Mabel H. James, Holland, New York, chairman of the Forum and a member of the SCSA.

TV Communications Improve

A televised farm newsreel—first of its kind in the agricultural field—moved into farm and home TV sets February 14. The new show emphasized the farm news angle —"spot" news plus interviews with farmers, farm leaders and advisers, federal and state officials, the people who make the news in agriculture.

Prepared and reported by one of the nation's Big Three press associations and TV news agencies, the show—titled "Farm Newsreel"—will continue to be beamed into the major farming regions of the country. Herschel Newsom, Master of the National Grange, calls Farm Newsreel a "pioneering development in agricultural communications" significant because of "the need for better communication between farmers and between city folks and farmers."

Television in Education. 1957. 124 pp., illus. Supt. of Documents, Gov't. Printing Office, Washington 25, D. C. 55c.

Presents an over-all view of TV as applied to education in 1957.

AUDIO-VISUAL

Film Lists

Available from the Forest Service is a recently released listing of Forest Service films available on loan for educational purposes. The booklet lists 16- and/or 35-mm. sound films, many of which have been cleared for TV use. Teachers may get a copy free from the Forest Service, Washington 25, D. C. or from any Forest Service office.

Similar lists can be obtained from the Soil Conservation Service, Washington 25, D. C., and the Fish and Wildlife Service, Washington 25, D. C.

Films

Water for the West. 16 mm, sound, color (also in black and white), 25 minutes. 1957. TV use permitted. Available through regional offices of the U. S. Forest Service.

Wilderness Alps of Stehekin. 16 mm, sound and color, 30 minutes. 1958. Released by the Sierra Club, 1050 Mills Tower, San Francisco 4, Calif. $156. Copies are available from several sources on a loan or rental basis. The filming was done in Washington State among the northern Cascades. The peaks, forests and glaciers shown are said to outrank in scenic, recreational and wildlife values any existing national park and any other possibility for such a park within the United States.

Watershed Wildfire. 16 mm., sound, in color; also black and white; 21 minutes. 1958. TV use permitted. Available through regional offices of the U. S. Forest Service. Story of the holocaust on the Santa Inez watershed in California.

News Notes

President's Column

INTERNATIONAL GOOD WILL

A COMMON PROBLEM frequently causes peoples of various interests, faiths and beliefs to work together. Such a problem will break down political, social, religious and economic barriers between them. This is being accomplished under such movements as the watershed program. Many other examples could be cited. The sociologist finds that a common interest is the catalyst that helps bridge inter-group communication. Many projects, designed to promote international good will, are based on this principle. The *Soil Conservation Society* is in part such an instrument. Over 500 *Society* members live outside the continental United States. Most of these members are professionally and directly working on soil and water conservation problems. It is this mutual interest that binds us together. Since we readily accept this membership we assume responsibility in providing them service. It is an opportunity for the *Society* to lend a hand in promoting international understanding.

Land use problems encountered by these members are frequently received by our *SCSA* office and routed to proper authorities for reply. We welcome this opportunity to be of service to our foreign members. Some of our chapters sponsor foreign members who because of their residence or other reasons find it difficult to pay dues. Each chapter might well accept such a sponsorship. The University of Michigan student chapter recently sent several hundred copies of the Spanish edition of one of our *Society* publications to Mexico. Members of our *Society* who travel professionally in foreign lands could boost the service effort by obtaining a list of members living in the area to be traveled. We are sure that contact with this membership would be mutually satisfying.

The *Society* has a contract with the International Cooperation Administration to help foster this entire program. The *Society* agrees to provide certain services to foreign members in return for memberships.

The *Society* welcomes for printing in the JOURNAL an occasional story from these members concerning their work.

This fall in Athens, Greece, a meeting of the International Union on Conservation will be held. Our International Relations Committee under the leadership of Dr. O. M. McConkey in Canada, and Dr. Edward H. Graham in Washington have been very active in helping arrange a program. It is possible that a soil and water conservation section will be permanently established in the *IUC* largely due to such efforts. Several of our members have places on the program.

This international work is part of the *Society's* program which receives little publicity yet in the main is lending considerable emphasis to the science and art of good land use.

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Strictly Personal

Professional conservationists cannot sit idly by and watch some of the shenanigans going on in their field without making some comment. Especially when a proven conservation organization that has been called by many students of government a most outstanding example of democratic action is under attack. Perhaps the existence of such local action groups is a thorn in the side of those on government payrolls (per diem or salary) who must take orders from higher levels. To some, community leadership is good to be sought after and used up to a certain point but should never be allowed to exert real influence or accept credit for accomplishment.

Soil and water conservation is not and cannot become a one-man show no more than a baseball game can be satisfactorily played by one player. It must be a teamwork job with each player having definite responsibilities. Aggressive players may occasionally collide with each other due to mixed signals or the desire to win but more games are won by a team of aggressive players than by teams made up of players afraid to trespass traditional lines. No "put outs" are made by "Alphonse-Gaston Acts." Statesmanly leadership is needed to coach the conservation team over these rough spots. Time has shown that each member of the conservation team—research, education, technical service, cost sharing and credit can make significant progress when working together as a coordinated unit. The public has a right to cry "play ball' when members of the team start fighting among themselves.

Fortunately, coordinated and aggressive teamwork among conservation agencies exists throughout much of the country. The conservation leadership provided by thousands of local citizens who volunteer their services in the public interest is a movement of which this country can be justly proud.

People are involved in soil and water conservation. Human nature being what it is, one can expect a few situations requiring the heavy hand of the coaches. Such action is pertinent now in some areas. An unfortunate situation is that certain groups and individuals, who are either publicity seekers or imbued with personal prejudice, would have the public believe that the soil and water conservation movement throughout the whole country is riddled with strife and dissension. Realistically, the "riddled with strife and dissension" is far from the truth. Conservationists everywhere have a responsibility to prove this by their actions and by their words. Conservationists as a group are proud of their accomplishments and are confidently looking to the job ahead.—RUSSELL G. HILL, *President*.

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Dear Mr. Pritchard:

Our 4,000 copies of "Wonder of Water" arrived in a nick of time. I wish to thank you for your prompt and effective action.

Conservation Week is being observed in our county this week; the booklets were distributed to every school pupil. "Wonder of Water" effectiveness as a tool in conservation education has been increased by heavy rains and flood threats this week.

You also might be interested to know that veteran teachers have all commented favorably on the booklet. I am somewhat surprised at this universally favorable reception. School personnel are more impressed with it than are some of our conservationists. In any event, it appears that the *Society* has again "zeroed in" on this important problem of conservation education.

Very truly yours,
Robin L. Harvey
West Virginia Chapter

The latest count on sales of THE WONDER OF WATER shows a total of 286,028, with Soil Conservation Districts, local businesses and industry among the heavy purchasers.

"LAND AND WATER FOR TOMORROW'S LIVING"

PROGRAM

Thirteenth Annual Meeting

Asheville, North Carolina—October 19-22, 1958

SUNDAY, OCTOBER 19, 1958

2:00 P.M.—REGISTRATION—Lobby of City Auditorium

6:30 P.M.—Informal Reception

7:30 P.M.—EVENING SESSION—West Ballroom, George Vanderbilt Hotel

Presiding: A. H. Veazey, Council Member SCSA, Raleigh, North Carolina

CHAPTER AWARDS—Herbert L. Hopper, Chairman, Awards Committee SCSA, Lafayette, California

CHAPTER DELEGATES SESSION
Leader: I. O. Hembre, Chairman, Chapter Activities Committee SCSA, Madison, Wisconsin

MONDAY, OCTOBER 20

8:00 A.M.—REGISTRATION—Lobby of City Auditorium

9:00 A.M.—MORNING SESSION—City Auditorium

Presiding: Alvin C. Watson, First Vice-President SCSA, Upper Darby, Pennsylvania

Invocation—E. H. Blackard, Pastor, Central Methodist Church, Asheville

Welcome Address—Hon. L. Y. Ballentine, Commissioner of Agriculture, Raleigh, North Carolina

9:30 A.M.—**President's Message**—Russell G. Hill, President of the SCSA, East Lansing, Michigan

10:00 A.M.—*Specialty*—**Natural Beauty in the Smokies**

10:10 A.M.—*Keynote Address:* **Resource Conservation in Tomorrow's Economy**—Maurice K. Goddard, Secretary, Pennsylvania Department of Forests and Waters, Harrisburg, Pennsylvania

11:00 A.M.—**Education in Resource Conservation**—Clarence M. Ferguson, Administrator, Federal Extension Service, Washington, D. C.

11:30 A.M.—*Announcements*

1:00 P.M.—AFTERNOON SESSION—City Auditorium

Presiding: H. G. Bobst, Council Member SCSA, Lincoln, Nebraska

Panel—*Theme: Resource Conservation and Public Policy*

Leader: H. B. James, Director of Instruction, School of Agriculture, North Carolina State College, Raleigh, North Carolina

The Role of the Scientist in Shaping Land Use Policies—Charles E. Kellogg, Assistant Administrator, for Soil Surveys, SCS, Washington, D. C.

Resource Conservation, Recreation, and Wildlife Needs—Conrad L. Wirth, Director of the National Park Service, Washington, D. C.

The Problem of Coordinating Competing Resource Uses—Irving K. Fox, Member, Water Resources Program Staff, Resources for the Future, Inc., Washington, D. C.

Discussion

Society's finest—that is what is indicated for the Asheville conference.

Committees, headed up by Ralph Sasser for program and Charles Patton for local arrangements, have created sessions and events full of vitality.

Staton McIver, who is chairman of the host Chapter, long has been strong for this meeting. The members of the North Carolina Chapter and Staton McIver fully expect a record-breaking registration.

A full program that promises much information, discussion and inspiration. To this, add the richness of Fall in the Smokies and good fellowship. It all tallies up to an invitation to you to attend.

APPLICATION FOR HOUSING ACCOMMODATIONS, NATIONAL CONVENTION S.C.S.A., ASHEVILLE, NORTH CAROLINA OCTOBER 19-22, 1958

For your convenience in making hotel reservations for the *Soil Conservation Society of America* convention to be held in ASHEVILLE on October 19-22, 1958, the necessary information and forms are supplied below:

The CITY AUDITORIUM has been designated as convention headquarters. There are two hotels and one motel within one block of the Auditorium. The housing committee will make all reservations. All hotels and motels are European plan.

Due to the large number of motels in and around Asheville, we are not listing them separately but in a separate letter each member will receive complete information about hotels and motels—or you may write to the housing committee. Double rates for motels in October run from $6.00 to $12.00 depending upon accommodations.

Please list your first three choices on the reservation application, showing desired rate and accommodations. All reservations, except for program participants, will be made on basis of date of receipt of reservation application. If the committee cannot fulfill your request, they will make a reservation as nearly as possible to your request and notify you immediately.

HOTELS	Single	Double	Twins	Suite	Dist. from Hdqs.
George Vanderbilt	$5.00-8.00	$ 8.00-12.00	$ 9.00-14.00	$23.00-25.00	Next door
Battery Park	5.00-8.00	8.00-13.00	9.00-15.00	25.00-29.00	1 block
Auditorium Court		8.00- 9.00	9.00-10.00		Next door
Asheville	3.75-4.00	7.00	8.00		1 block
Carolina	3.50-5.00	4.50- 6.00	7.00		4 blocks
Langren	4.00	7.00	7.00		5 blocks
Asheville-Biltmore	4.50-6.00	7.00- 9.00	7.00-10.00	12.00-14.00	5 blocks
Treadway Manor	6.00-7.00	8.00-12.00	10.00-14.00	16.00-20.00	1 mile
Grove Park Inn	8.00	12.00	12.00		1¾ miles

DETACH AND MAIL TO:
Soil Conservation Society of America
Housing Committee
P. O. Box 3050
Asheville, North Carolina

HOTELS: First Choice _____

Second Choice _____

Third Choice _____

(Insert number of each type of accommodations desired)

Single_____ Double_____ Twin_____ Suite_____

Price range desired_____ Date of arrival_____ Date of departure_____

Individual requesting reservations_____

Mailing address_____

Other persons who will occupy rooms: 1._____ 2._____

3._____ 4._____ 5._____ 6._____

3:30 P.M.—SESSION CONTINUED—West Ballroom, George Vanderbilt Hotel
Presiding: James K. Vessey, Member of the Program Development Committee SCSA, Atlanta, Georgia

Use of Grass Base Rotations in the Southeast—J. E. Pollock, Management Agronomist, SCS, Raleigh, North Carolina

Achieving Conservation on Low-Income Farms in the Small Watersheds—Clarence Daniels, Work Unit Conservationist, SCS, Jackson, Tennessee

Effective Use of Cost-Sharing in Getting Conservation on the Land—Lloyd L. Foster, Agricultural Stabilization and Conservation Office Manager, Mecklenburg County, Charlotte, North Carolina

Maximizing Returns Through a Coordinated Forestry Program on Small Watersheds—Victor B. MacNaughton, Proj. Mgr., USFS, Tallahatchie-Yazoo Flood Control Project, Oxford, Mississippi

Speeding Conservation Acceptance through FFA Chapter Activities—Nate A. Bastain, Jr., Vocational Agriculture Teacher, Carthage, Tennessee

Successful Conservation Demonstrations in 4-H Club Work—J. F. Doggett, Extension Soil Conservationist, Raleigh, North Carolina

5:00 P.M.—TOUR OF CONSERVATION EXHIBITS—Exhibit Hall

6:30 P.M.—BARBECUE—City Auditorium

7:30 P.M.—ENTERTAINMENT

TUESDAY, OCTOBER 21

9:00 A.M.—MORNING SESSION—City Auditorium
Presiding: Herbert A. Hopper, National Council Member SCSA, Lafayette, California

Soil and Meterological Aspects of Fission Product Fallout—Lyle T. Alexander, Chief, Soil Survey Laboratory, SCS, Beltsville, Maryland

9:45 A.M.—Panel—*Theme: Ground Cover, Land Management, and Runoff in Small Watersheds*
Leader: Marshall Qualls, Director, Kentucky Soil and Water Resources Commission, Frankfort, Kentucky

Economic-Hydrology Studies on Parker Branch Watershed—Emanuel L. Baum, Chief, Agricultural Economics Branch, Division of Agricultural Relations, Tennessee Valley Authority, Knoxville, Tennessee

Effects of Forests on Runoff—Herbert C. Storey, Director, Division of Watershed Management Research, U. S. Forest Service, Washington, D. C.

Runoff from Range Lands—Robert V. Keppel, Agricultural Engineer, Watershed Technology Research Branch, Division of Soil and Water Conservation, Agricultural Research Service, Tucson, Arizona
Discussion

11:00 A.M.—**Range Production Potential in America**—C. H. Wasser, Dean, College of Forestry and Range Management; and Don Hervey, Head, Department of Range Management, Colorado State University, Fort Collins, Colorado

11:30 A.M.—**Forest Potential in the Southeast**—Henry J. Malsberger, General Manager, Southern Pulpwood Conservation Association, Atlanta, Georgia

12:00 Noon—**Economic Potential in Utilization of Organic Waste**—M. S. Anderson, Senior Soil Scientist, Agricultural Research Service, Beltsville, Maryland

2:00 P.M.—TOUR OF BILTMORE ESTATE

7:00 P.M.—EVENING SESSION—City Auditorium
Annual Banquet—Presiding: Russell G. Hill, President SCSA
Invocation—Wayne W. Williams, Chaplain U. S. Army (Retired)
Presentation of Fellows and Honorary Members
Introduction of New Officers of SCSA

(Speaker to be announced)

WEDNESDAY, OCTOBER 22

9:00 A.M.—MORNING SESSION—City Auditorium
Presiding: Walter G. Gumbel, Council Member SCSA, Fairmont, West Virginia

Training Tomorrow's Scientists for Resource Development—Howard A. Meyerhoff, Executive Director, Scientific Manpower Commission, Washington, D. C.

9:45 A.M.—**The Professional Conservationist of Tomorrow**—D. A. Williams, Administrator, Soil Conservation Service, Washington, D. C.

10:30 A.M.—**Industry's Role in Tomorrow's Resource Development**—(Speaker to be selected)

11:15 A.M.—**Agricultural Resources of Tomorrow**—A. D. Holmes, Past Vice-President, Southeastern States, National Association of Soil Conservation Districts, Gallion, Alabama

11:45 A.M.—*Discussion*

12:30 P.M.—BUSINESS LUNCHEON—West Ballroom, George Vanderbilt Hotel
Presiding: Elmer L. Sauer, Second Vice-President SCSA, Urbana, Illinois
Invocation—Rex Collins, Pastor, Jupiter Baptist Church, Buncombe County, North Carolina

The Role of Professional Societies in Resource Development—George M. Browning, Associate Director, Iowa State Experiment Station, and Member of the SCSA Professional Training Committee, Ames, Iowa

JOURNAL OF SOIL AND WATER CONSERVATION AWARDS—Elmer L. Sauer, Chairman, Editorial Board SCSA, Urbana, Illinois

PRESIDENT'S CITATIONS AND COMMENDATIONS FOR OUTSTANDING SERVICE—Russell G. Hill, President SCSA

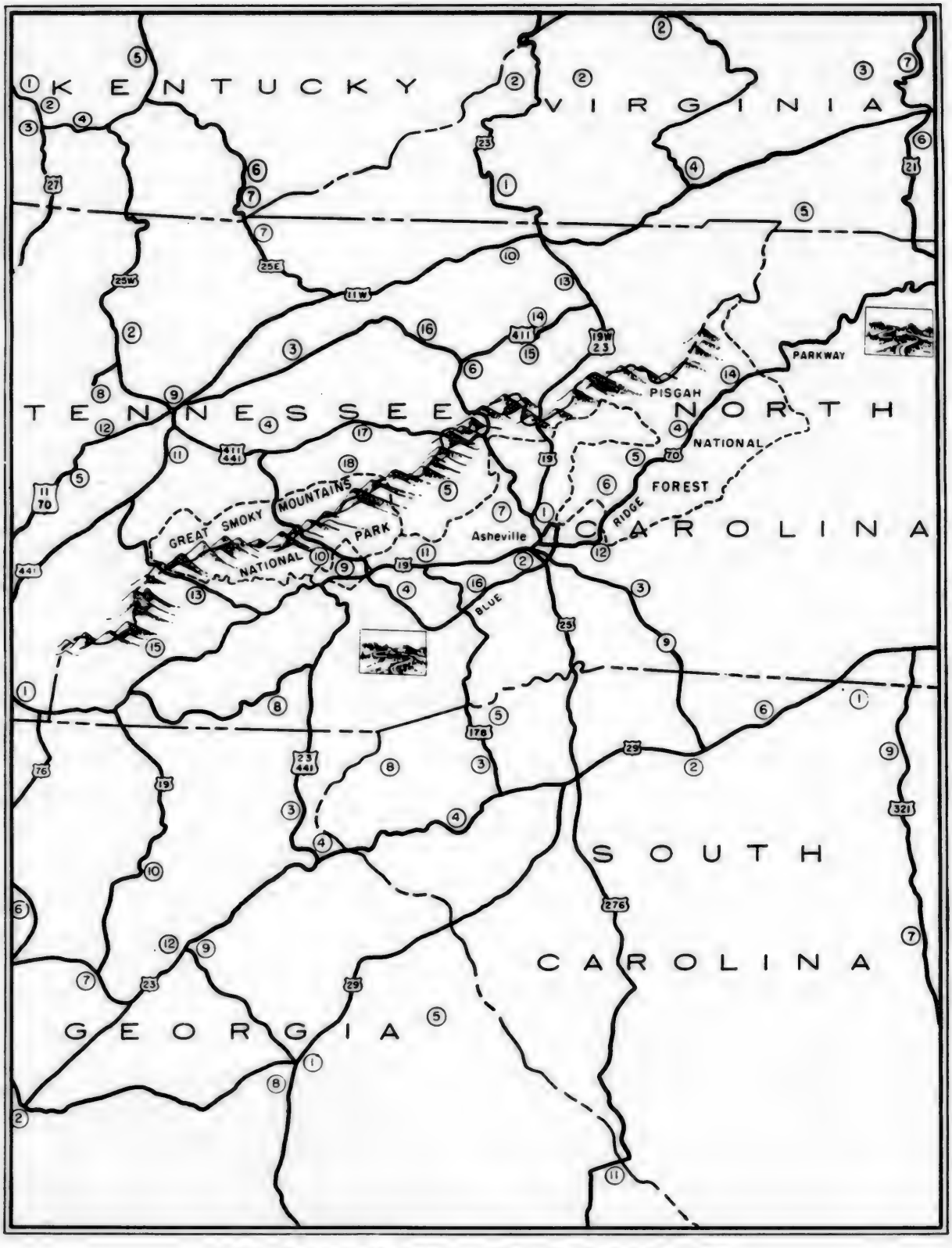
Reports—Executive Secretary; Treasurer; Others

Other Business

Closing Remarks—Russell G. Hill, President

ADJOURN

"Have banner -- will travel!"



SOME POINTS OF INTEREST

TO HELP YOU PLAN YOUR CONFERENCE TRIP

[This map and legend have been prepared by the local arrangements committee (13th Annual SCSA Conference) under the direction of Charles Patton and Leon Sisk. Use it in planning your trip to Asheville. The numbers below refer to the "circled" numbers within the several states on the map. Many helpful guides and publications can be obtained by writing the various "conservation" and "development" agencies of each state. A brief, mimeographed list of selected publications is available free from your chapter secretary or from the SCSA office, 838 Fifth Ave., Des Moines 14, Iowa.—EDITOR.]

NORTH CAROLINA

1. **Asheville.** A jewel of a city, set in velvet green among the rumpled mountains of the Blue Ridge . . . where the SCSA meeting will be held. Asheville is the unofficial capital of the western North Carolina "Land of the Sky" area, a tremendous playland of national forests, beautiful lakes, streams, mountains, and valleys. Fall foliage will be at a peak during SCSA meeting.
2. **Biltmore House.** A 365-room mansion of magnificent French Renaissance architecture, filled with priceless antiques, tapestries, paintings, and books. The chateau is located on a 12,000-acre estate, with virgin stands of pine and balsam, and rolling meadowland for the purebred Jerseys of Biltmore Dairy Farms.
3. **Chimney Rock.** A giant 256-foot granite boulder affords a breathtaking view of Lake Lure and Hickory Nut Gorge. Elevator to top through solid rock.
4. **Blue Ridge Parkway** (Skyline Drive). America's favorite scenic drive . . . nature's air-conditioned highway . . . 3,000 to 6,000 feet elevation . . . linking the Great Smoky Mountains and Shenandoah National Park.
5. **Pisgah National Forest.** 1,178,000 acres, includes vast acreage of virgin forest and highest peak (Mt. Mitchell) east of the Mississippi. Hunting and fishing privileges.
6. **Mt. Mitchell.** 6,684-foot peak sets the pace for the great Black Mountains range, a part of Southern Appalachians. Paved road to summit affords visitors one of the most inspiring views in eastern America. Camping facilities.
7. **Parker Branch Experimental Watershed.** Established by TVA and North Carolina State College to determine hydrologic effects of a farm management program designed to increase individual farm income.
8. **Southeastern Forest Experiment Station** (Coweeta Hydrologic Laboratory). A 5,600-acre experimental watershed, where the relation of vegetation to water supply and the hydrology of steep mountain land are being studied. The Forest Service invites delegates to see the results of 25 years of watershed research.
9. **Cherokee Indian Reservation.** Where 4,000 Indians, remnants of the once-mighty Cherokee nation, live on the 65,000-acre Qualla Reservation, owned and administered by the tribal council. An authentic Cherokee Indian village—Oconaluftee—a museum and a school may be visited.
10. **Great Smoky Mountain National Park.** (In North Carolina and Tennessee.) Finest area of primeval wilderness in eastern America. 1,200 flowering plants, vast forests, crystal-clear streams, cascades and waterfalls, cloud-crowned peaks, and black bears so numerous they have become the trademark of the Smokies. In October foliage will be an indescribable panorama of red and gold and green beautiful beyond description. Fish, swim, hike, or just "take it easy."
11. **Lake Junaluska.** Summer assembly grounds of the Methodist Church.
12. **Montreat and Ridgecrest.** Assembly grounds of Southern Presbyterian Church and Southern Baptist Church, respectively.
13. **Fontana Village and Dam.** Largest dam east of Rockies and fourth highest in world impounds waters of vast Fontana Reservoir to provide excellent fishing and other sports.
14. **Grandfather Mountain.** A good road leads to the summit and Mile High Swinging Bridge connects the two peaks. Rugged and photogenic.
15. **Joyce Kilmer Memorial Forest.** Where largest trees in the 3,800-acre virgin timberland in the Pisgah National Forest are never to be cut. Named in honor of the author of "Trees."
16. **Mt. Pisgah.** One of the most beloved and best known of western North Carolina mountains; 5,721 feet.

SOUTH CAROLINA

1. **Kings Mountain National Park.** Scene of battle in 1780 which broke British control of South Carolina.
2. **Spartanburg.** SCS Southeastern Engineering and Watershed Protection Unit and SCS Cartographic Unit. In Spartanburg County, there are 3,000,000 peach trees, largely on the contour, with grass waterways in natural draws.
3. **Pickens.** Twelve Mile Creek Pilot watershed.
4. **Clemson.** Clemson Agricultural College (Land Grant College), and home of American Statesman John C. Calhoun, senator, secretary of war, secretary of state, and twice-elected vice-president.
5. **Table Rock State Park.** Source of Greenville water supply. Trail leads from developed park to summit of Table Rock, 1,000 feet above lake.
6. **Sunny Slope Farm.** 1,500 acres of peach orchards on the contour with grass waterways in all natural draws and ponds for irrigating entire acreage.
7. **Fairfield County.** Once one of the worst eroded counties in the Southeast; now one of the best protected. Known widely as county of pines, pastures, and ponds.
8. **Oconee State Park.** 1,700 feet above sea level. Nearby is one of nation's largest trout hatcheries.
9. **Cameron Farm.** Whole-farm conservation program including 23 ponds.

TENNESSEE

1. **Copperhill Area.** 33,000 acres of deeply eroded hills, resembling "The Badlands," defoliated by former uncontrolled fumes from copper smelters. 1,200 acres reforested since 1935. Conservation plan calls for planting 300 acres to pines and 50 acres to kudzu yearly.
2. **Norris Dam and Park.** The 34,000-acre lake provides every aquatic sport and a shore line of 800 miles for fishing. First of the chain of "Great Lakes of the South" built by the Tennessee Valley Authority.
3. **Cherokee Lake**; 4. **Douglas Lake**; 5. **Fort Loudown Lake.** Three of the 20 lakes built by TVA in the Tennessee Valley.
6. **Andrew Johnson's Home.** Museum with original tailor shop, the home, and the grave of the 17th President of the United States.
7. **Pinnacle Mountain.** From its top can be seen the far-flung panorama of the Cumberland Mountains including portions of six states. Besides being of scenic interest, much strip-cropping can be seen from atop the mountain.
8. **Oak Ridge Atomic Energy Museum.** Exhibits and educational programs that tell the story of the development and peaceful applications of atomic energy.
9. **Knoxville.** Site of the University of Tennessee and the College of Agriculture, the state's land-grant college, the Tennessee Experiment Station, and Blount Mansion, the first frame house built west of the Alleghenies.
10. **Holston Ordnance Works** (U. S. Government). 5,000 or more acres of managed woods and tree planting.
11. **Dairy Farm** (Bill Haddox, owner). 500 acres; 200 acres stripcropped. 160 acres fescue and Ladino clover pasture; 100 acres orchardgrass and clover pasture.
12. **Site of "richest" Tennessee Valley land.** Dark red soil of the Dewey and Decatur series. Land value about $1,000 an acre.
13. "D. Boon cilled a bar" was carved on a beech tree within sight of Boones Creek School. Tree is gone. A marker is now there. Daniel Boone hid from Indians in 1760 under a nearby waterfall.
14. **Jonesboro.** First capital of State of Franklin. Original building still standing
15. **Smithdale Hereford Farm.** 850 acres with 560 acres of fescue and Ladino pasture; 80 acres alfalfa hay; seven livestock water ponds; 116 acres rotation cropland.
16. **Lick Creek Watershed** flood plain visible south of highway for three to four miles. 175,000-acre watershed in process of work plan development. Largest in state.
17. Pollution in Pigeon River.
18. **Cosby.** Scene of Ramp Festival. (You've never heard of Ramps?)

GEORGIA

1. **Athens.** University of Georgia, first chartered state university; SCS state office; SCS Training Center; Extended Education (Adult) Center.
2. **Atlanta.** Fabled "Gone With the Wind" city; State Capitol; Stone Mountain, world's largest solid body of exposed granite; cyclorama of Battle of Atlanta.
3. **Tallulah Gorge.** Where Tallulah River is diverted through rock tunnel to develop hydroelectric power. River once flowed over 251-foot sheer rock precipice.
4. **Toccoa.** North Fork Broad River Pilot watershed; Toccoa Falls, 186 feet high, most beautiful in state.
5. **Elberton.** Granite quarries.
6. **Tate.** World's largest marble deposit.
7. **Settingdown Creek subwatershed of the Coosa River authorized watershed.** Most nearly complete of the subwatersheds in the Coosa.
8. **Southern Piedmont Conservation Experiment Station.**
9. **Gainesville.** Headquarters for largest poultry producing area in the world.
10. **Dahlonega.** Gold discovered 20 years before California strike. Can still be panned in streams.
11. **Clark Hill Dam.** 122-square-mile lake with 1,200-mile shore line. Created for hydroelectric power but famous for fishing and recreation.
12. **Lake Sidney Lanier.** A unit in the initial phase of a comprehensive plan to develop the water resources of the Apalachicola, Chattahoochee, and Flint Rivers.

VIRGINIA

1. Natural tunnel formed through a limestone mountain for approximately 800 feet, through which passes a creek and a railroad.
2. Some of the largest coal mining operations in the world, both pit mining and strip mining. **"The Breaks"** Interstate Park also can be seen in this area.
3. **Burks Garden.** A high mountainous valley of about 40,000 acres completely surrounded by mountains except for one gap through which flows the stream draining the area.
4. **Abingdon.** Home of Barter Theatre. Robert Porterfield and his cast are always a treat in any play.
5. **Mt. Rogers and White Top Mountain.** The two highest points in Virginia.
6. **Jackson Ferry** and **Austinville** area at which may seen large mining operations for lead and zinc, with by-products of ground limestone. The old shot tower at Jackson's Ferry is an interesting land mark.
7. **State Penal Farm.** An outstanding example of soil and water conservation.

KENTUCKY

1. **Lake Cumberland.**
2. **Beaver Creek Game Refuge.** For deer, turkey and grouse in Cumberland National Forest.
3. **Beaver Creek Strip Mine Study Area.** Where study is being made to compare silt losses from strip mine area to National Forest where soil cover is maintained.
4. **Cumberland Falls State Park.** Picturesque waterfalls amid rugged scenic surroundings. Swimming, boating, fishing, camping, hiking.
5. **Levi Jackson State Park.**
6. **Pine Mountain State Park.**
7. **Cumberland Gap.** Famous for passage of pioneers into Kentucky and the Northwest.

SCSA BYLAWS REVISIONS EXPLAINED

Members of the *Soil Conservation Society of America* will have the opportunity to vote on a change of the Bylaws within the next few days. A copy of the proposed Bylaws appears in this JOURNAL. Keep it nearby until you receive the ballot for voting.

Why should the *Society's* Bylaws now be revised? When the *Society* was formed in 1945 it operated under a Constitution and Bylaws established by the founders and adopted by the members. They have been revised on three or four occasions but basically remain the same as they were in 1945. During the intervening years the *Society* has made such growth that several parts of the old Constitution and Bylaws are out-of-date. In 1949 the *Society* was incorporated and should have operated only with Bylaws within the framework of the Articles of Incorporation. For one reason or another the Constitution was not dissolved. Legal advisors now recommend that this change be made. Thus if the new Bylaws are approved by the membership they will take the place of the existing Constitution and Bylaws.

In addition to the legal reason stated for the proposed changes, several other points are incorporated into the new proposed Bylaws, namely:

1. Canada will be a new region and will be represented on the council.
2. Student membership eligibility will be broadened and student branches of existing chapters may be formed.
3. The new proposal will officially establish an executive committee to handle affairs of the *Society* while the council is not in session. Such a committee has existed unofficially but its status has been in doubt.
4. The position of executive secretary and his responsibilities will be recognized for the first time in the Bylaws.
5. A few changes in nomination procedure will be made, based on past experience:
   a. The first and second vice-presidents will become candidates for president in the annual election.
   b. The number of candidates for officers and for council member-at-large will be limited to one for each region of the *Society*.
      Provision is made for a primary election in the event more are nominated.
   c. The number of candidates for regional council members will be limited to one for each state or province within the region with the same provision for a primary election.
6. The fiscal year of *Society* will be changed from the calendar year to July 1 to June 30 of each year. This will be for the business aspect of budgeting, financing, and auditing. It will not change the annual dues of members which will remain on a calendar year basis.
7. The proposed Bylaws will provide for the establishment of a development fund whereby money can be raised for specific projects. Under the old Bylaws any money received had to go into a permanent trust fund and only the interest could be used for the projects. As a result no one has contributed to a permanent trust fund and it has been almost impossible to raise money for specific projects.

Several other minors changes have been made and each member is encouraged to read the entire proposal.

The proposed changes have been under consideration of the *Society's* Organization and Policy Committee, chairmanned by Roy D. Hockensmith, for three years. He has secured the assistance of his committee, the council, and legal advisors available to the *Society*.

R. D. Hockensmith, Chairman of the Organization and Policy Committee of SCSA.

The council took action in March 1958 to submit the changes, after several revisions, to the membership for balloting. The council unanimously urges the members to vote "yes" on the ballot which will be mailed from the national office on July 28. It will accompany the regular ballots for voting in the annual election of officers and council members—watch for it. To be counted the ballot must be received in the office by October 6, 1958.

To be adopted the new proposal must be accepted by two-thirds of the members casting ballots. The new Bylaws, if adopted, will take effect January 1, 1959. The results of the balloting will be announced at the Asheville convention and in the November JOURNAL OF SOIL AND WATER CONSERVATION.

It is suggested that you keep this issue of the JOURNAL handy until your ballot reaches you within a few days. If you desire a copy of the old Constitution and Bylaws you may request it from the national office.—H. WAYNE PRITCHARD, *Executive Secretary*.

Membership Report: New and Reinstated Members—June 1

State	1958 Quota	Enrolled Jan.-June	Over or under Quota
Alabama	50	18	—32
Arizona	30	3	—27
Arkansas	50	4	—46
California	100	22	—78
Colorado	50	11	—39
Connecticut	10	9	— 1
Delaware	10	1	— 9
Florida	80	10	—70
Georgia	**40**	**58**	**+18**
Idaho	50	6	—44
Illinois	50	25	—25
Indiana	70	18	—52
Iowa	100	50	—50
Kansas	70	43	—27
Kentucky	60	23	—37
Louisiana	30	0	—30
Maine	20	19	— 1
Maryland	60	29	—31
Massachsuetts	15	8	— 7
Michigan	80	21	—59
Minnesota	60	13	—47
Mississippi	80	51	—29
Missouri	60	15	—45
Montana	30	1	—29
Nebraska	60	29	—31
Nevada	20	2	—18
New Hampshire	20	11	— 9
New Jersey	30	11	—19
New Mexico	40	6	—34
New York	50	11	—39
North Carolina	100	64	—36
North Dakota	100	9	—91
Ohio	70	17	—53
Oklahoma	80	63	—17
Oregon	50	7	—43
Pennsylvania	50	10	—40
Rhode Island	10	0	—10
South Carolina	52	26	—26
South Dakota	80	54	—26
Tennessee	**70**	**98**	**+28**
Texas	100	15	—85
Utah	20	14	— 6
Vermont	**20**	**29**	**+ 9**
Virginia	80	46	—34
Washington	50	32	—18
West Virginia	70	44	—26
Wisconsin	70	21	—49
Wyoming	40	2	—38
Puerto Rico	5	0	— 5
Washington, D. C.	50	16	—34
Foreign	120	53	—67
Canada	50	19	—31
Misc.	100	2	—98

PROPOSED BYLAWS
SOIL CONSERVATION SOCIETY OF AMERICA, INC.

ARTICLE I—NAME

Section 1. The name of this Society shall be THE SOIL CONSERVATION SOCIETY OF AMERICA, INCORPORATED.

ARTICLE II—OBJECTIVES

Section 1. The objectives of this Society shall be the development and advancement of the science and art of good land use and management and the promotion of conservation of soil, water, and related renewable natural resources, including, without limitation, trees, grass, fish, wildlife, and all other forms of beneficial plant and animal life, and for these purposes to employ education of the people and other appropriate means, to the end that mankind may have the use and enjoyment of these resources forever.

Section 2. The Council may formulate, issue, and publish statements expressing the attitude of the Society on matters within the scope of this article, conforming with the provisions thereof and with any action taken by the Society on such matters.

ARTICLE III—MEMBERSHIP

Section 1. The membership of the Society shall consist of Professional Members, Members, Student Members, Fellows, Honorary Members, and Sustaining Members. Members of all grades shall have the privilege of the floor at any meeting of the Society and shall have the right to vote upon any proposition or at any election.

Section 2. (a) Professional Members shall be persons who are or have been professionally engaged in practicing or teaching soil, water, and related natural resource conservation, carrying on research or educational work therein, or administering activities related thereto.

(b) For admission as a Professional Member an applicant must show professional qualifications by training or by previous or current experience in the field of soil and water conservation or closely allied fields. Satisfactory evidence thereof will be indicated: (1) by graduation from an accredited college or university with major credits in courses relating to the conservation of soil and water and related resources; or (2) by equivalent educational training, or (3) by having had at least five years responsible service in practice, teaching, research, educational work, or administration of soil, water, and related natural resource conservation activities, or in the supervision of those engaged therein.

(c) A member of any other grade may, upon application, become a Professional Member upon attaining the required qualifications.

Section 3. (a) Members shall include those not eligible for the grade of Professional Member, whose work or interests have furthered soil and water conservation in a substantial manner.

(b) For admission as a Member an applicant need not be directly engaged in any soil and water conservation activity, but shall be eligible if, by his interest or work, he has furthered the program of soil and water conservation, and has thereby shown that he understands and supports the fundamental objectives and principles of the science and art of good land use and management.

Section 4. Student Members shall include those students who are enrolled in an accredited college and who are majoring in soil and water conservation or any of the biological, physical or social sciences related to natural resources.

Section 5. (a) Fellows shall be selected from Professional Members who have performed exceptionally outstanding service in practicing, investigating, administering, or teaching soil and water conservation, or closely allied fields, who have achieved outstanding recognition as leaders in directive or individual work in that field and who have a well-known record and reputation therefor among Professional Members and Fellows. In addition, they should have made a significant contribution to the Society.

(b) Nomination of a candidate for the grade of Fellow shall be made by petition signed by not less than 25 Professional Members or Fellows, which shall be submitted to the Executive Secretary at least 90 days prior to the annual meeting. Each petition shall be accompanied by a biographical sketch of the candidate, including an account of his career and accomplishments. Election to the grade of Fellow shall be by affirmative vote of at least three-fourths of the Council, except that a Council member who is a candidate shall not vote on his own election. (To help facilitate the election, the Executive Secretary may mail a ballot therefor to each Council member at least 45 days prior to the annual meeting, and the ballots shall be marked and mailed to the Eecutive Secretary at least 90 days prior to that meeting.) A suitable certificate of recognition shall be presented to each newly elected Fellow at that meeting.

Section 6. (a) Honorary Members shall be selected from persons, whether members of the Society or not, who have made outstanding contributions to the field of soil and water and related natural resource conservation and who have demonstrated worthiness to be recognized by the Society therefor, regardless of their professions or occupations.

(b) Nomination of a candidate for the grade of Honorary Member shall be made by petition signed by not less than 25 Professional Members, Members, or Fellows. Otherwise the procedure for selection and recognition of Honorary Members shall be the same as for Fellows.

Section 7. (a) Sustaining Members shall be organizations, agencies, institutions, corporations, firms, or individuals subscribing annually the amounts prescribed by the Council to advance the objectives of the Society.

(b) Individual Sustaining Members, who also meet the requirements for other grades of membership, shall be enrolled and have privileges accordingly.

Section 8. Membership may be terminated by voluntary resignation or by failure to pay dues or by two-thirds vote of the Council. Termination of membership for reasons other than voluntary resignation or payment of dues shall be preceded by 30 days notification before action is to be taken against the member whose membership is in jeopardy, so that such member shall have an opportunity to defend himself against any accusations made or pending against him.

Section 9. Except as otherwise provided in these bylaws, the Executive Secretary shall determine the qualifications of all applicants for membership but may refer any doubtful question in respect thereto to the Council. In case of an adverse ruling by the Executive Secretary upon an application, the applicant may appeal to the Council.

ARTICLE IV—COUNCIL

Section 1. (a) The Society shall have a governing body known as the Council, consisting of the President, the First and Second Vice-Presidents, the immediate Past President, Executive Secretary, and Treasurer, all serving ex officio, and nine elected members, each of whom shall be a Professional Member, Member, Fellow, or individual Sustaining Member. The Executive Secretary shall be a non-voting member of the Council. Three of the elected Council members shall be members-at-large elected by the entire membership of the Society, and six shall be regional members, one elected by the membership in each of the respective six regions hereinafter described.

(b) The regions for the aforesaid purposes are:

(1) **Northeastern region,** comprising the States of New York, Maine, New Hampshire, Vermont, Massachussetts, Connecticut, Pennsylvania, New Jersey, Rhode Island, Delaware, Virginia, Maryland, and West Virginia, and the District of Columbia;

(2) **Southeastern region,** comprising the States of Arkansas, Tennessee, North Carolina, South Carolina, Louisiana, Mississippi, Georgia, Alabama, and Florida, and Puerto Rico and the Virgin Islands;

(3) **North Central region,** comprising the States of Minnesota, Wisconsin, Michigan, Iowa, Illinois, Indiana, Ohio, Missouri, and Kentucky;

(4) **Great Plains region,** comprising the States of Montana, North Dakota, South Dakota, Wyoming, Nebraska, Colorado, Kansas, New Mexico, Oklahoma, and Texas;

(5) **Western region,** comprising the States of Washington, Oregon, Idaho, California, Nevada,

Utah, and Arizona, and the Territories of Hawaii and Alaska;
(6) **Canadian region,** comprising all of Canada.

Section 2. (a) Council members, excepting the officers, shall be elected for three-year terms. The terms of office for Council shall begin on January 1 following their election. The elections shall be so arranged and held that one member-at-large and the members from Regions 2 and 4 are elected in one year, one member-at-large and the members from Regions 1 and 3 in the next year, and one member-at-large and the members from Regions 5 and 6 in the next year.

(b) Any question respecting the election or term of any officer or Council member not covered by these bylaws shall be determined by the Council.

Section 3. The Council shall: (1) control and manage the affairs and funds of the Society; (2) fill for the unexpired term any vacancy occurring in the membership of the Council; (3) authorize the employment of salaried personnel as required and determine their duties, rate of pay, and period of employment; (4) recommend to the Society the adoption of amendments or revisions of the bylaws; and (5) perform such other duties as may be prescribed in the bylaws. A majority of the members of the Council shall be required for a quorum for the transaction of business and, except as may be otherwise specifically provided in the bylaws, a majority vote of the members of the Council voting on any matter within the scope of the authority of the Council shall be required for its determination.

Section 4. Meetings of the Council may be called by the President or by a majority of the Council. At least 30 days notice of the date and place of each meeting and of the general nature of the business to be acted upon shall be given to all members of the Council by mail or in person; provided, that in case of an emergency, which shall be stated in the notice, a meeting may be called upon not less than ten days notice.

Section 5. There shall be an Executive Committee, consisting of the President, the two Vice-Presidents, Executive Secretary, and Treasurer, which shall handle routine and emergency business as directed by the Council.

ARTICLE V—OFFICERS

Section 1. The principal officers of the Society shall be a President, First and Second Vice-Presidents, and Executive Secretary, and a Treasurer, each of whom shall be a Professional Member, Member, individual Sustaining Member, or a Fellow. No individual may hold more than one office in the Society at the same time.

Section 2. The President and the two Vice-Presidents and Treasurer shall be elected annually as hereinafter provided. The term of office of each shall commence on January 1 following their election and continue until December 31 of the same year.

Section 3. The Executive Secretary shall be appointed by the other members of the Council, and shall serve at the pleasure of the Council.

Section 4. Each Officer shall serve until his successor has been elected and has qualified.

Section 5. The President shall preside at meetings of the Society and of the Council, shall appoint all committees, unless otherwise directed by the Society or the Council, and shall perform all other duties incident to his office.

Section 6. In the absence or disability of the President, the First Vice-President shall serve. In the event of the absence or disability of the President and First Vice-President, the Second Vice-President shall serve. In the absence or disability of the President and the First and Second Vice-Presidents, the Council shall select a President pro tempore who may or may not be a member of the Council.

Section 7. The Executive Secretary shall be the executive officer of the Society under the general direction and control of the Council of which he is a non-voting member. He shall issue notices of all meetings of the Society and of the Council; countersign all deeds, leases, and conveyances executed by the Society; affix the seal of the Society thereto; keep such other papers as shall be required or directed to be sealed; keep a record of the proceedings of the Council; keep safely and systematically all books, papers, records and documents belonging to the Society or in any wise pertaining to the business thereof; and perform all other duties incident to the office of Executive Secretary. He shall be bonded in such amount as the Council may determine at the cost of the Society.

Section 8. The Treasurer shall be responsible for all funds of the Society and shall perform all other duties incident to his office. He shall be bonded in such amount as the Council may determine at the cost of the Society. The accounts of the Treasurer shall be audited at the close of each fiscal year and at such other times as directed by the Council.

Section 9. The President, Executive Secretary, Treasurer, and Editor shall report to the Society at the annual meeting regarding their respective activities and the affairs of the Society with which they were concerned during the preceding year. The Treasurer's report shall cover the fiscal year ending June 30 and such further time as may be practicable.

ARTICLE VI—NOMINATION AND ELECTION PROCEDURE

Section 1. (a) A Nominations Committee and an Election Committee of three each, consisting of Fellows, Professional Members, or Members shall be appointed by the President not later than 180 days before the annual meeting.

(b) The Nominations Committee shall nominate and submit to the Executive Secretary not later than 90 days before the annual meeting a list of qualified candidates who have consented to have their names appear on the ballot for the elective offices and Council memberships, including at least one candidate for each position, together with candidates otherwise nominated as hereinafter provided.

(c) The Nominations Committee may, at its discretion, accept as its nominee any candidate otherwise nominated and may nominate a second candidate in any case where only one has been otherwise nominated, except that the First and Second Vice-Presidents automatically become candidates for the Presidency unless they decline to run. All candidates for First and Second Vice-President and President shall have served on the Council (but not necessarily at the time they become candidates for such positions), or on national committees or have comparable experience which, in the opinion of the Nominating Committee, provides equivalent experience in the work of the Society.

(d) Nominations by petition may be made and presented to the Nominations Committee (1) if adopted by a Chapter at a regular meeting, or at a special meeting called for such purpose, or by the Executive Committee of the Chapter if authorized to do so at a regular Chapter meeting, or (2) if signed by ten or more voting members of the Society who may or may not be members of a Chapter. All petitions for nominations in order to be considered shall be submitted to reach the Nominations Committee at least 120 days before the annual meeting.

(e) The number of candidates on the ballot, presented to the membership for voting, for each of the positions of President, First and Second Vice-Presidents and Treasurer and Council member-at-large shall not exceed the number of regions recognized by the Society. Not more than one candidate from each region shall be on the ballot for each of the above positions. The Council shall determine the general qualifications for Treasurer.

(f) The number of candidates on the ballot, presented to the membership, within a region for voting on a regional Council member shall not exceed the number of states, territories, provinces, or combination thereof in the region for which the Council member is to be elected. Not more than one candidate from each state, territory or province may be on the ballot for this position. The District of Columbia shall be considered as a state for this purpose.

(g) If a reduction in the number of candidates is necessary to conform to Article VI, Section 1 (e) and (f), the Nominations Committee shall provide, through the facilities of the national office, an election within the region (or regions) or state (or states) where all candidates (within the regions or states) shall be placed on the ballot and the eligible membership within these regions or states shall vote on the candidates to reduce the number in accordance with the provisions of Section 1 (e) and (f). The one receiving the greatest number of ballots in such elections shall be nominated.

(h) The list of candidates submitted by the Nominations Committee shall include all nominations duly presented in accordance with the provisions of these bylaws. Should a candidate be nominated by petition for more than one office, the Nominations Committee shall submit his name

only for the office for which he shall declare his preference in writing or, failing such declaration, for the office of higher rank.

(i) A petition which nominates more than one candidate for the same office shall be void.

(j) The annual election shall be by mail ballot as hereinafter provided.

(k) At least 90 days prior to the election date the Nominations Committee shall send its report to the Executive Secretary for action.

(l) At least 30 days prior to the election date (the last day on which ballots may be received in order to be counted), the Executive Secretary shall mail a notice thereof to each voting member of the Society, together with instructions for voting and a written or printed ballot containing a list of all candidates certified by the Nominations Committee. Suitable ballot envelopes shall be enclosed and shall be mailed to the Executive Secretary so as to reach him not later than 20 days prior to the annual meeting. The exact date will be made known to the membership each year and shall be called the election date. Ballots which are not received at least 20 days prior to the annual meeting or by the election date shall not be valid and shall not be counted.

(m) Within three days after the election date, the Executive Secretary shall deliver to the Election Committee all official unopened ballot envelopes received by him, as hereinabove provided, from qualified voters with his certificate to that effect.

(n) Within five days after delivery of the unopened ballot envelopes, the Election Committee shall meet and count the ballots. If an individual votes for more candidates for the same office or offices than are to be filled as prescribed on the ballot, all of his votes for such office or offices shall be held void.

(o) The candidate receiving the greatest number of votes for each office shall be elected to that office.

(p) The Elections Committee shall certify the results of the election to the President and shall deliver the ballots and an attested copy of such certification to the Executive Secretary, who shall hold the same available for inspection by any member for six months thereafter, whereupon he may destroy the ballots.

(q) Announcement of the result of the election shall be made by the retiring President at the annual meeting and through publication in the official organ of the Society.

ARTICLE VII—SOCIETY MEETINGS

Section 1. (a) An annual meeting of the Society shall be held at a place and time to be determined by the Council. At least 3 months notice thereof shall be given by publication in the Society Journal and otherwise as the Council may direct.

(b) As soon as practicable after each annual meeting the incoming President shall appoint a Program Committee of such membership as he shall deem proper to prepare a program for the next annual meeting. The committee shall submit a proposed program to the Executive Secretary in time for review by the Council at a meeting of which he shall notify the chairman of the committee. Thereafter, the committee shall prepare the final program, conforming with any instructions given by the Council, and shall submit a draft thereof to the Executive Secretary at such time as he shall direct for printing and distribution before the meeting.

ARTICLE VIII—COMMITTEES

Section 1. Except as otherwise provided in these bylaws, standing or temporary committees may be created by the Council for any purpose within the scope of the objectives of the Society. Special temporary committees may be created by the President for like purposes not otherwise provided for. The President shall appoint the members of all committees except as otherwise directed by these bylaws or by the creating authority. All committees shall report on their activities as directed by the creating authority.

ARTICLE IX—DUES AND FINANCES

Section 1. The annual dues of each class of membership shall be determined by the Council. When a change in dues is under consideration, the Council shall publish notice of such change in the *Journal of Soil and Water Conservation* and solicit chapter review of the proposed change before final action.

Section 2. Annual dues shall be payable in advance of the first day of January. Members of any grade in arrears on April 1 shall be declared delinquent and shall thereupon forfeit all privileges of membership until their dues are paid, except that the Council, for good cause shown, may approve the reinstatement of any delinquent member on payment of current dues but with remission of back dues to such extent as it shall deem proper.

Section 3. (a) Except as otherwise provided by these bylaws, funds of the Society shall be used only as follows: (1) to maintain the national office and pay permanent salaried and otherwise employed personnel; (2) to defray the cost of publishing the *Journal* and other publications and scientific documents of the Society; (3) to buy necessary postage and stationery; and (4) as the Council, at its discretion, may otherwise from time to time determine.

(b) No compensation shall be paid to any elected officer or Council member.

(c) Officers, Council members, committee members, and delegates of the Society may, if expressly authorized by the Council, be reimbursed for actual expenses incurred in attending meetings or transacting Society business.

Section 4. A Finance Committee shall be appointed by the President to advise with the Council and the officers regarding the budget, the handling of the Society's funds and investments, and any other business matters of the Society.

Section 5. The fiscal year of the Society shall be from July 1 to June 30 following, inclusive. Prior to the beginning of each fiscal year the Executive Secretary and Treasurer, working with the Finance Committee, shall prepare and submit to the Council an itemized budget for the coming year. Upon approval of the budget by the Council, the Treasurer may make expenditures within the provisions and limitations of the budget without further authorization. Otherwise no expenditures shall be made without express authorization from the Council. The Council may amend the budget at any time.

Section 6. The Society may receive gifts, bequests, donations or grants or funds for any conservation purpose within the scope of its objectives.

ARTICLE X—DEVELOPMENT FUND

Section 1. (a) There shall be a fund to be known as the Development Fund of the Soil Conservation Society of America. The Development Fund shall be administered by a board of trustees, to be known as the Development Fund Board of the Society, subject to the general authority of the Council to manage and control the affairs and funds of the Society as provided by law. The Council may delegate to the Development Fund Board such functions and powers respecting the fund as it deems appropriate. Upon the adoption of these bylaws the Council, without further action, shall be deemed to have delegated to the Board all the functions and powers prescribed for the Board by the bylaws, except as the Council shall expressly direct otherwise.

(b) The Development Fund Board shall consist of the Executive Secretary and the Treasurer of the Society, by right of office, and five additional members to be appointed by the Council, of whom one shall be a member-at-large of the Council and the others shall be appointed from among the members of the Society not normally serving on the Council. The appointed members of the Board shall serve for terms of three calendar years, except that of those first appointed, two shall serve for three years, two for two years, and one for one year, as designated by the Council. Each appointed member shall serve until his successor has been appointed and has qualified.

(c) Any one of the appointed members of the Board may be removed, with or without cause, at any time by a vote of two-thirds of the members of the Council.

(d) Any vacancy in the appointed membership of the Board shall be filled by the Council for the unexpired term.

(e) Any four members of the Board shall constitute a quorum. The Board shall elect from the appointed membership a Chairman and a Vice-Chairman. The Executive Secretary of the Society shall serve as Secretary of the Board, and the Treasurer of the Society shall serve as Treasurer

of the Board. The Board may appoint an assistant secretary from its members to serve in the absence or disability of the Secretary. The Board may authorize any of its officers or members to execute instruments and to perform in the name of the Board other acts necessary or proper for transaction of the business of the Board.

Section 2. There shall be placed in the Development Fund all moneys received by or for the Society or the Board from the following sources: (1) Gifts, grants, or bequests for which no special purpose is designated by the donor or testator, those designated specifically for the Development Fund, or those designated for any special purpose other than for the operating or publishing expenses of the Society, or the reserves for such expenses; and (2) Income from or proceeds of sale of any property received under like conditions.

Section 3. The Council shall direct the transfer to the Development Fund of any moneys in the permanent trust fund at the time these bylaws become effective subject to any conditions or restrictions placed upon such moneys by direction of the donors or testators, and subject to such further conditions consistent therewith as the Council may prescribe. The Council may direct the transfer to the Development Fund at any time, under such conditions as it may prescribe, of any moneys in the general funds or reserve funds of the Society not needed for other purposes.

Section 4. The Board may receive gifts, grants, bequests, or devises of money or property of any kind for the purposes of the Development Fund, and shall hold, use, and dispose of the same therefor as herein provided. In case any such gift, grant, bequest, or devise is made to the Society for any such purpose, the Council shall authorize and direct an appropriate assignment, transfer, or conveyance thereof to the Board.

Section 5. Any moneys or property received by the Board subject to express conditions shall be held, used, expended or disposed of by the Board in accordance therewith. All other moneys in the Development Fund and all other property received therefor shall be held, used, expended or disposed of for such purposes as the Board may direct in furtherance of the objectives of the Society, subject to the provisions of this section. Before proceeding with the expenditure of any such money or the disposal of any such property, the Board shall prepare a statement of the proposed general purposes thereof and procedure therefor, and shall submit the same to the Council for its advice and approval, and the Board shall be guided thereby in its transactions.

Section 6. The Treasurer shall be responsible for all moneys in the Development Fund and all property held for the purposes thereof and shall be bonded on account of moneys or property of the Development Fund in his custody in such amount as the Board may determine, in addition to the amount of his regular bond to the Society. The cost of such additional amount bond shall be paid by the Board out of any moneys in the Development Fund not restricted against such use; otherwise by the Society.

Section 7. Any moneys in the Development Fund not needed for immediate use and not restricted against investment as herein provided may, by direction of the Board, be invested in bonds of the United States or in certificates of deposit or other securities issued by banks, trust companies, or savings and loan associations to the extent that the same are federally guaranteed or insured, or in any other securities in which the funds of savings banks may lawfully be invested in the State of issue; provided, that investments in any securities other than United States bonds shall be subject to approval by the Council.

Section 8. All operating costs and other expenses incurred by or in behalf of the Board shall be paid upon authorization or approval by the Board out of any money in the Development Fund not restricted against such use; otherwise by the Society upon authorization or approval by the Council. No compensation shall be paid to any member of the Board.

ARTICLE XI—CHAPTERS

Section 1. Chapters of the Society may be authorized by the Council upon written petition of ten or more members. Each chapter must hold at least one meeting each year to retain its authorization. The officers of each chapter shall include a Chairman, a Secretary, and such others as the chapter may deem necessary. Student chapters of the Society may be authorized by the Council upon written petition of ten or more student members. Four or more student members may organize a student branch to be affiliated with a regular chapter.

Section 2. Any chapter may, subject to the approval of the Council, adopt such bylaws as it may find expedient, provided that no part thereof shall conflict with the Articles of Incorporation or the bylaws of the Society. The Society shall not be responsible for the debts or obligations of any chapter.

Section 3. The Council may rescind the authorization and terminate the existence of any chapter.

Section 4. Every application for a charter shall include a description of the geographical area proposed to be served. In case of a conflict over territory between the applicants for a new charter and an existing chapter, or between two existing chapters, the Executive Secretary shall notify the parties concerned and allow them an opportunity to determine the boundaries in dispute by mutual agreement, subject to the approval of the Council. Failing such determination, the Council shall determine the boundaries.

Section 5. A member may affiliate with a chapter outside the chapter area in which he lives.

Section 6. Any member of the Society may attend the meetings of any chapter, but may vote only in the chapter to which he belongs.

Section 7. A member may change his membership from one chapter to another.

ARTICLE XII—PUBLICATIONS

Section 1. The Society shall publish serially a Journal of Soil and Water Conservation under the supervision of the Executive Secretary and the immediate direction of an Editor, who may be assisted by an Editorial Board or by associate editors of such number as may be authorized or prescribed by the Council upon recommendation of the Editor. The Editor shall be appointed by the Council and shall be responsible to the Executive Secretary under whose direct supervision he will work. The Council shall be responsible for the general editorial policies, contents, and form of the Journal. The Editor shall have final authority of reading matter in the Journal within the financial limits set by the Council but with full accountability to the Executive Secretary and the Council for performance.

Section 2. Each member of the Society of any grade in good standing shall receive one copy of each issue of the official periodical(s) of the Society.

ARTICLE XIII—MISCELLANEOUS

Section 1. Awards. The Society may from time to time, at the direction of the Council, offer scholarships, medals, or other awards in recognition of outstanding work or ability in the field of soil and water conservation.

ARTICLE XIV—AMENDMENTS

Section 1. The bylaws may be amended upon a proposal submitted by the Council by a two-thirds vote of the members voting on the proposal by mail at a regular annual election or at a special election called by the Council. A copy of the proposed amendment and the existing bylaw concerned, with a ballot stating clearly its general object and referring to the copy for particulars, shall be mailed by the Executive Secretary to each voting member of the Society at least 30 days before the date set for the election. An amendment shall, unless otherwise provided therein, be effective immediately upon its adoption. The President shall appoint a special Election Committee for any special election. The ballots for any proposed amendment shall be mailed, handled and counted as provided for the election of officers and the results shall be announced by the President as soon as practicable.

ARTICLE XV—EFFECTIVE DATE OF BYLAWS

Section 1. These bylaws shall take effect January 1 next after their adoption. Officers and Council members theretofore elected shall be deemed to have taken office as contemplated upon their election, but shall thereafter be subject to the provisions hereof.

CHAPTER NEWS

San Francisco Bay Chapter (California) took an hour and half tour, including movies, of the model of San Francisco Bay constructed by the U. S. Corps of Engineers. This May meeting was garnished by family picnics.

Hoosier Chapter (Indiana) continues its excellent newsletter featuring each issue a "Let's Get Acquainted With . . ." In May it was Dr. Helmut Konke, his wife and daughter. Doc is author of a book "Soil Science Simplified" which is used in conservation education. Also given in the newsletter is hearty welcome to new members (each is named, with address). A short on "Plow Plant" makes good reading. The chapter's 10th Anniversary is coming up soon. The June 20 summer meeting featured a visit to the federal fish hatchery near Rochester and a discussion at Bob Kern's pond by Paul S. Handwerk, fishery biologist. The June newsletter featured Oscar E. Ackerman, land management agronomist at Goshen.

Northern Illinois Chapter held its summer meeting at Champaign, with the public invited. A tour of the Agronomy plots of the University, a luncheon and talk by Don Williams, and a tour of displays and experiments in agriculture engineering. The May Newsletter featured some progress items: (1) Successful land judging contest. Illinois teams coached by Burt Ray won first and fifth in the regional contest at Purdue. (2) Work started on a demonstration farm pond (about one acre of water) in Kankakee State Park. Pond surrounded with rose hedges and pine trees should be completed in 1958. (3) Plans for distributing **Down the River** to all mail boxes in Champaign county are reaching a final stage. Five members of the chapter were initiated into Gamma Sigma Delta, the honor society of agriculture.

Iowa Chapter has come up with another outstanding Newsletter edited by Charlie Ballantyne. Included are chapter activities, with two of the "areas" planning ground and air tours on the Little Sioux and the Harmony watersheds in early June. Completion of "conservation" set of color slides is moving to a climax. Duplicate sets will be made and become available to schools and clubs of all kinds. Rules are prepared for a photo-arts contest with good prizes for winners in black and white and color divisions. Display and other uses for winning pictures are being planned. The chapter has ordered a banner. Arrangements are being made to charter a bus for the Asheville trip. Iowa is aiming to be the "top state in 58." Area I (23 northwest Iowa counties) issued a newsletter full of announcements and suggestions to members. Ed Crocker is chairman, with Ralph Dewey and Dick Hogue heading up information and program committees respectively.

Area One of the Iowa chapter June 7 Little Sioux watershed trip got 48 visitors into the air and 14 on ground tours. Flights of 50 minutes covered some 90 miles with views of 19 watersheds in various stages of completion. The topography in northwest Iowa is rough and gullies up to 60 feet deep in the loess soil have had to be stabilized. Work of the U. S. Corps of Engineers was seen at the new Turin bridge. A ground tour was also made to the Nutt Hollow watershed where 20 farms and 2,220 acres are involved. Retention, stabilization and sediment control structures and grassed waterways, channel improvements, detention and regular terraces were observed. The Nutt Hollow is one of 150 organized subwatersheds within the Little Sioux. George Lampe of Sioux City was in charge of field tours.

Old Line Chapter (Maryland) plans a joint summer outing with the Soil Conservation district supervisors at Ocean City, Md., July 14-16. Some 20 members will attend the Asheville conference. Members are active in promoting the Teachers' Conservation Workshop to be held at University of Maryland this summer.

Michigan Chapter held its 1957-58 FFA Chapter Activity in Soil and Water Conservation awards program, June 12. Highlights of the program and activities of some 57 FFA chapters made up an imposing summary of Vo-ag class and FFA chapter activities; application of soil conservation practices; cooperation with Districts; and informational projects. A copy of the summary can probably be obtained by writing W. S. Harrison, 412 Agricultural Hall, Michigan State University, East Lansing, Michigan. This is the activity that won the national award in SCSA contest in 1957.

Minnesota Chapter got out its No. 1 Newsletter (quarterly) in May. A neat offset job, handled by the Inf. and Publicity committee chaired by Bill Russell, 1504 Crawford, St. Paul 13. Four photos were used. There was an unusual amount of news coverage of *Society* and chapter affairs, a president's column by C. A. Van Doren, list of six committees and members, report on the NASCD meeting, new districts, committee news, TV conservation programs announced, notices on new and revised Minnesota publications, technical developments, and coming events—including that big meeting of SCSA at Asheville, North Carolina, October 19-22.

Red River Valley Chapter (Minnesota and North Dakota) has planned two meetings for the fall, Aug. 9 and 10, Peaceful Valley of Theodore Roosevelt National Park and Sept. 6 at Fargo, N. D. At least one carload of members will head for Asheville in October.

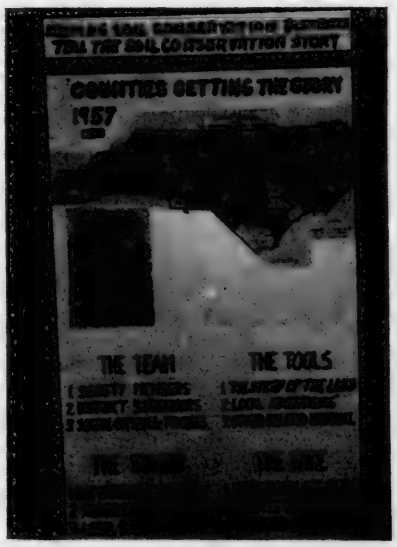
Show-Me Chapter (Missouri) has helped in getting 46 schools in west-central Missouri to participate in soil judging training and contests. The May newsletter also carried a good release on proposed changes in the *SCSA* Bylaws. Victor L. Sheldon, agronomist, Olin Mathieson Chemical Corporation, St. Louis, was main speaker at the June 22 annual meeting on the subject of "Atomic Research with Fertilizers and Plants."

New Jersey Chapter held a special spring trip, June 14, to study at first hand proposed water supply developments in north Jersey. Speakers on water supply were on hand to answer questions. This fall voters in New Jersey will decide upon a $45,850,000 bond issue to develop a water supply in north Jersey and to study water supplies over the entire State. Harry Slayback was chairman of this "educational" field trip. Bob Hanna states that the student chapter at Rutgers has grown to 22 and had a conservation float in the Agricultural Field Day.

North Carolina Chapter is doing a real job getting ready for the Asheville conference if a recent special newsletter to its members means anything. Staton McIver, chapter chairman, prepared the newsletter. He listed 13 committees on Local Arrangements of the *SCSA* October 19-22 meeting. Here are the chairmen: J. B. Watts (banquet); Myron Jensen and Marty Shaw (barbecue); John L. Brown (chapter exhibits); G. L. Winchester (early bird and hospitality); Morris McGough (entertainment); J. Hall Campbell (exhibits—commercial and trade); H. N. Kelly (finance); Frank Veach (greeting); J. C. Jester (information service); Mr. and Mrs. A. W. Nesbitt (ladies hospitality); Leon Sisk (publicity); Burwell Smith (registration and reservations); Albert Clark (tour to Biltmore Estate).

According to advanced information this 1958 *SCSA* annual conference will be attended by more than 1,000. Special efforts are also being made to attract teachers and educators locally in Asheville and from North Carolina and surrounding states to attend all or some of the sessions. In this way educators and teachers can meet many outstanding conservationists and hear discussions of many of the problems and actions in soil and water conservation particularly.

The conference in Asheville appears to be shaping up to one of the greatest yet held by the *Society*.



North Carolina Chapter pushed a vigorous sales of Society publications. From one of the Chapter's exhibits we learned how it was done.

Western Wheels Chapter (North Dakota) announces its third annual statewide SCSA meeting, August 9 and 10 at the Theodore Roosevelt National Memorial Park. This is a fitting place and program to commemorate the Centennial of "Teddy" Roosevelt. *Society* members outside of North Dakota are cordially invited to attend this weekend in the rugged and picturesque Badlands of western Dakota. Clayt Bartz, chapter chairman, had his hand in the spokes of the chapter's newsletter named the "Hubbub."

[The National Park Service has issued a 60-page, illustrated booklet entitled *Theodore Roosevelt and the Dakota Badlands* by C. L. Brooks and R. H. Mattison. Copies can be obtained at 25c each from Supt. of Documents, Govt. Printing Office, Washington 25, D. C.]

Northern New England Chapter (Maine, Vermont, New Hampshire) members received a good letter from Harold M. Pulling, chmn., chapter activities committee. Hal said membership, good programs, acknowledging outstanding members, and projects are essential to chapter health and growth.

All Ohio Chapter met January 20 and 21 at the Youth Center of the Ohio State Fairgrounds in Columbus. Lloyd Harrold, director of the Coshocton Hydrologic Experiment Station, was elected president; John Ferguson of the Ohio Department of Natural Resources is vice-president and Charles A. Dambach, Ohio State University, is secretary-treasurer. The meeting included discussions on new drainage legislation, cropping and pesticide methods, tree production and distribution, marketing, siltation problems of strip mines, use of fertilizers, and conservation economics. Russell Hill, SCSA president, was the dinner speaker. Chapter chairman Harrold issued a good newsletter in March setting up working committees, listing attributes of the Society and getting steam up for the Asheville meeting.

East Central Oklahoma Chapter entertained families and guests at a picnic at Okmulgee May 16, with 60 persons and fried chicken present. Harry Chambers, deputy state conservationist and national councilman, reported on state and national news of the *Society*. Members agreed to promote distribution of **Wonder of Water.**

Stillwater Chapter (Oklahoma) had 60 members on hand for its April meeting. Dr. Horace J. Harper gave an illustrated talk on "Soil and People in the Belgian Congo." The July 23 meeting will be a family picnic outing.

Virginia Chapter issued its No. 1 *Newsletter* February 25 and a No. 2 in March. No. 1 reports high interest in the Asheville meeting with at least 100 from Virginia. Goals for the year include 100 more members in *SCSA;* sale of 50,000 **Wonder of Water;** an outstanding meeting in September; enter national membership contest; and enter chapter activities contest. Fall meeting will be Sept. 26-27 at Natural Bridge. No. 2 Newsletter stated that 10,200 **Wonder of Water** had been sold by March 28. Chairman Wayne M. Hypes handled No. 1 and Secretary-Treasurer Ruth T. Douglas No. 2 newsletters.

Inland Empire Chapter (Washington and Northern Idaho) recently awarded "certificates of merit" to Adrian L. DeVries, radio station manager at Colfax, and Walla Walla reporter Doug Blessinger. Both men have been outstanding in getting out information on soil and water conservation in the districts of Washington, Idaho and Oregon. At the June 17 meeting the facts about the proposed Youth Training Camp in Soil and Water Conservation and Watershed Planning were presented to the *SCSA* chapter members and guests. It is proposed that the chapter sponsor this camp which would have active cooperation from the Soil Conservation districts in eastern Washington and northern Idaho; the respective state extension services; Washington State College, University of Idaho, and the two state vocational agricultural departments.

West Virginia Chapter holds its 13th annual meeting, Sept. 26-28 at Jackson's Mill, with time off Saturday afternoon to hear or view (TV?) the WVU vs. Oklahoma U game. Here's some good planning on a fine diversified program. *Business meeting is spaced in so that members will be on hand;* and scattered throughout program are topics closely allied to chapter and *SCSA* affairs. This program is worthy of study by other Chapters. Copy can probably be obtained from E. V. Wickline, Secretary-Treasurer, located at SCS, Lewisburg, W. Virginia.

Washington, D. C. Chapter had 70 members on hand for its April meeting. Gordon Zimmerman, research director of the National Grange, spoke on "Acreage reduction and wise land use." He urged chapter members to take more interest and activity in the development of farm programs. John Barnard reported on items taken up at the *SCSA* Council meeting held early spring in Des Moines, Iowa. The May meeting included a layman's view and an entomologist's view on pesticides. Dr. Irston R. Barnes, president of the Washington Audubon Society, and Dr. Clarence H. Hoffman, ARS entomologist, were the speakers.

West Virginia Chapter Fair Project

C. T. Sydenstricker, Secretary of the West Virginia State Fair, told the International Association of Fairs and Expositions in Chicago on December 4, 1957, how a living exhibit of grasses and legumes was presented at their regular fair in August 1957. The exhibit was sponsored by the **West Virginia Chapter** of the *Soil Conservation Society of America.* Twelve grasses and twelve legumes were shown each in a plot nine feet square. Four of the grasses were lawn species or ones that could be used as lawn grasses. Four new varieties of alfalfa shown side by side is the feature in the exhibit.

"These plots make an excellent educational exhibit which fit in well with the state's booming grassland agriculture," Sydenstricker said. He also pointed out that a similar exhibit of trees is under way for future fairs and that the living grass-legume exhibit will be "bigger and better" next year. [*See figure below.*]

Best estimates indicate that over 25,000 people actually visited the exhibit during the fair. Veterans training classes and vocational agriculture classes have used the exhibit for instructional purposes. The exhibit is permanent and interested groups are welcome to visit it any time.

CONSERVATION AND CITY SCHOOLS

Did you ever go hunting on a wildlife refuge?

Several members of Washington (D. C.) Chapter Number 1 did just that last fall. We teamed up with some 60 teachers and school supervisors and went hunting for ideas that would help teach elementary school students the value of soil, water, forest and wildlife resources.

We met on Saturday morning at Patuxent, Maryland, at the Department of the Interior's wildlife refuge. From there we moved on to the USDA Research and Experiment Station at Beltsville. The school people saw first-hand the results of conservation farming contrasted with other methods still too prevalent in many areas. They learned a great deal about the need for forest management. They saw how feed, water and cover for wildlife could be developed in multipurpose projects that also provide for soil and water conservation.

Although attendance was limited to permit greater individual participation, each of the seven Capital area school systems was represented.

This was but one of several occasions during the past year when teachers in the Washington area schools tried to become better informed about teaching conservation. This did not come about through any change in school curriculum. Nor is it an activity in which teachers are required to participate.

It all started four years ago when Mrs. Anne Maloney, a teacher in East Silver Spring elementary school in Silver Spring, Maryland wanted to do something to get her 6th grade students interested in conservation. She suggested the U. S. Department of Agriculture as a possible source of material for class projects. One of the students, Patricia Thompson, enlisted the service of her dad, Murray Thompson, long-time USDA employee. Murray turned to friends in the *Soil Conservation Society*. Several assisted in getting together material. A small team took the material out and discussed it with the principal and the sixth grade teachers in his school.

On the ride back from the school, Murray and his crew got the idea of setting up a chapter education committee to offer similar service to other schools within the Washington area. Two main ideas emerged. One was that the increasing growth of urban areas increases the need for city children to get an understanding of what "conservation" of our soil, water, forest and wildlife resources means and why it is important to the future welfare of all of us. The other was the realization by Tom Ayers, Chapter President, and Bill Endersbee, our activities chairman, that constructive projects are necessary to keep a chapter enthusiastically alive.

Our work began with an informal luncheon. We invited representatives from each of the seven Washington area school systems (District of Columbia; cities of Alexandria and Falls Church, Virginia; Fairfax and Arlington counties in Virginia; Montgomery and Prince Georges counties in Maryland). We had nothing definite to propose—just an idea to talk about.

We soon found common ground. We shared a joint concern. There were fears that today's city-born, city-educated youngsters are in danger of losing interest in the land and the miraculous processes through which it satisfies human wants.

The school people welcomed our interest. It was evident that they would appreciate practical aids towards the stimulation of conservation interest. But it was just as evident that they were reluctant to commit already overloaded teachers to additional programs.

We offered our assistance—hedging somewhat because of our own crowded schedules. It was the consensus that in the beginning we could be most effective in helping inform teachers about published material on conservation and in furnishing speakers and discussion leaders for special studies and projects.

The luncheon with the school people has become an annual affair. The group has been enlarged to include some teachers as well as supervisors.

We discuss happenings of the past year and lay out general plans for the year ahead. School representatives freely discuss conservation activities within their schools and solicit ideas for meeting particular problems.

As a result of ideas developed in these discussions, we set aside a day each year for the exhibit of conservation materials available from public or private agencies. Teachers and supervisors come in and browse through the materials and either obtain copies or find where desired materials are available. Also, we mail packets of current publications to the various school systems; last year we mailed 166 packets. Our folks contributed pamphlets which they believe will be most helpful to teachers in the upper elementary and junior high grades.

We furnish the schools a list of speakers in different fields of conservation as well as the names of persons who will work on conservation activities with the teachers and principals in their communities.

We have been asked to help arrange for movies and exhibits, assist students in preparing exhibits, send representatives to award presentations and furnish discussion leaders for teachers' institutes and other teachers' meetings. We have served as judges for conservation exhibits at school science fairs.

Teachers and children seek advice on conservation and beautification projects on school grounds. Interest is stimulated by organizing classes into teams that are responsible for different problem areas on their campus. It's heartening to see the zeal with which these youngsters tackle conservation projects once they see the problem and realize they can do something about it.

Last year a joint committee of school people and members of our education committee set up a pilot study on the adequacy of teaching materials now available. The study is aimed at practical uses of available aids. Recommendations may be made for extra items patterned directly to the needs of schools in this area.

Members of the education committee represent a wide range of agencies having conservation interests. They are: The National Wildlife Federation represented by Stewart Brandborg and Virginia Russell; U. S. Department of Agriculture represented by Milt Mangun, Office of Information, Charles Mattison, Forest Service, Adrian Fox, Soil Conservation Service, Murray Thompson, Commodity Stabilization Service, and Frank Clayton, Agricultural Conservation Program Service; U. S. Department of Health, Education and Welfare, Dr. Milton Cummings; and U. S. Department of the Interior by Jack Culbreath, Fish and Wildlife Service and Evan Flory, Indian Service. Wendell Tascher of the Federal Extension Service also serves on the committee.

Murray Thompson has served as chairman since the committee was set up (the last year, the membership voted unanimously to refuse a replacement). No agency has been lost from the original committee although new ones have been added. It has been the policy to ask people to assist in the work of the committee, or to serve on it, without regard to whether they are members of the Society. This has resulted in the quiet acquisition of some new members.

Interest in the activities of the committee has grown each year. Every indication is that its work will continue to expand. —FRANK W. CLAYTON.

M. T. Agustine, SCS, uses a spot on the Patuxent Wildlife Research Refuge to show school people how land capabilities determine soil and water conservation practices. This was one of several planned fields trips sponsored for school people by the Number 1 Chapter.

Charter Members of the SCSA

(Continued from the May 1958 Journal)

★ ★ ★

When the Soil Conservation Society of America was organized about 1,200 individuals, who had joined by December 31, 1945, were designated Charter Members.

It is natural that the ranks of these early members be depleted through death, illness, retirement from employment in the field, new interests or employment, or just plain procrastination or neglect in keeping up-to-date on dues payments. Charter cards are maintained by those charter members who are not delinquent in back year(s).

A recent count shows that there are now about 650 Charter Members still on the active roll of the SCSA. It is a pleasure to see these published. We hope that you will find friends on this list with whom you will wish to correspond.

Any mistakes or omissions should be called to our attention at the National office.

★ ★ ★

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Soil Conservation Service: 147; 148; 149; 150; 152; 157; 158; 159; 174.

Department of Antiquities, Tripolitania: 160; Figure 3, p. 161.

Point Four (F. D. Larson and O. Brogan): Figures 4 through 8, pages 161-162.

U. S. Forest Service: 165; 166; 167.

Purdue University, News Service: Figure 2, p. 171.

New Hampshire Fish and Game Department: Figure 1, p. 171.

Karl F. Ziegler (SCS): 175.

Colorado State University: Photograph of R. E. Dils.

Leon J. Sisk: Cartography, map on page 186.

Soil Conservation Society of America: 193.

West Virginia Chapter, SCSA: 194.

Washington, D. C., Chapter Number 1, SCSA: 195.

Martin H. Meyer: Art work on "Schema", page 173.

Felix Summers: Art work, pages 172; 173; 178; 181; 183; 184; 185; and cartoon, 200.

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NEWS OF MEMBERS

R. A. Wilcox, SCS, Des Moines, **William Greiner,** executive secretary of Iowa's state soil conservation committee, **Charles Ballantyne,** extension soil conservationist at Ames, and **Gilbert Fridley,** president the Iowa SCD commissioners, will judge the Goodyear Tire and Rubber Company soil conservation contest in Iowa.

The American Forestry Association recently commended *SCSA* member, **E. A. Norton,** especially for his services to the Association's Award's Committee.

Irving B. Stafford, New York state conservationist, and *John Porter,* SCS, were judges in the Empire State "Outstanding Young Farmer's" contest.

Kyle Peterson, Clark county (Missouri) SCS office, had marked a survey line with wire stakes bearing plastic flags. The flags disappeared and the area was covered with deer tracks.

Tom C. Kennard, state conservationist of Ohio (SCS), and **Bryce Browning** of the Muskingum Conservancy District in Ohio received each the Ohio Governor's Award of Recognition for outstanding services in the field of conservation and natural resources. The awards were presented to these *Society* members (Browning is an Honorary member) and to two other Ohioans, Cosmos Blubaugh and D. W. Galehouse.

A large number of *Society* members were active in the Ohio Mid-Century Governor's Conference on Natural Resources, May 13-15. General conference chairman was **Charles A. Dambach. Robert Finlay** is in charge of publication of proceedings.

Richard K. Frevert, formerly professor of agricultural engineering at Iowa State College, is now director of University of Arizona Agricultural Experiment Station at Tucson.

C. E. Kingery, Range conservationist, and ardent member of the *SCSA,* wrote a very complimentary letter to the JOURNAL staff recently. "C. E." is a charter member of the *Society* and we apologize for missing him in the printed list. Kingery's excellent article, "Working SCSA Chapters" has been reprinted from the January JOURNAL and given top circulation among all chapters.

Lindo Bartelli has successfully passed the preliminary examinations for a doctorate at the University of Illinois. His thesis will cover a study of subsoil horizon developments in some northeastern Illinois soils.

D. T. Webb, chairman of the *SCSA* Mississippi chapter has been confined to the hospital at Grenada, after a heart attack.

Executive Secretary **H. Wayne Pritchard** will attend the Virginia chapter meeting Sept. 26 at Natural Bridge, Virginia.

Dr. Martine Emert, professor of geography at Texas Christian University, spreads the good work of soil and water conservation through many students who in turn become teachers. Her students last semester got five farmers to become district cooperators. She makes good use of *Society* publications and the JOURNAL in her classes.

Ernest Walker (Urbana, Illinois) has prepared an article on soil conservation and erosion for a revised edition of the *Encyclopaedia Britannica.*

Robert A. Jones, formerly executive secretary of Farm Equipment Institute, Chicago, has retired after nearly 39 years with FEI. Douglas Hewitt of St. Paul is now executive secretary.

Harry Porter of New York state SCS will advise on seeding waterways in preparation for the National Plowing matches to be held at Hershey, Pa. Aug. 19-24.

Brian Reich, Department of Agriculture, Pietermaritzburg, South Africa, will arrive in Iowa on September 1 with his family to spend three years in the United States. He will be at Iowa State College studying soil hydrology.

Homer E. Stennett, *SCSA* member in New York state drove 50 miles on a very stormy day to make delivery of a request for blood. He helped save a life.

Ben Muirheid and his wife, Wilma, on duty in India, killed a marauding leopard. Ben was working on a contour map and received a request from a nearby village for help. Using a partly eaten bullock carcass as bait, Ben and Wilma waited for the leopard. Wilma held the spotlight while Ben took one shot with his 30-06. The two Muirheids are now heroes in the village.

Harry Chambers has been appointed Territorial Conservationist, SCS, P.O. Box 4671, San Juan 23, Puerto Rico. More about this in September issue of JOURNAL.

NECROLOGY

William D. Crawford, SCS, Wrightville, Georgia.

John B. McCleskey, soil conservationist SCS, Hartwell, Georgia.

Victor H. Jones of College Park, Maryland, died March 6. Dr. Jones received his doctorate from the University of Iowa in geology and sedimentation. He was associate with Central Technical Unit of the SCS Research Center at Beltsville prior to his death.

Miles H. Cubbon died at his home in Carroll Park, Pennsylvania, May 4. Dr. Cubbon received the Ph.D. in soil technology from Cornell University. He was employed in the USDA, Soil Conservation Service. His most recent assignment was the evaluation of the long time use of water for agricultural purposes in the Delaware Basin. He is survived by his wife, Nina Patten Cubbon, and daughter, Adelia Anne Cubbon.

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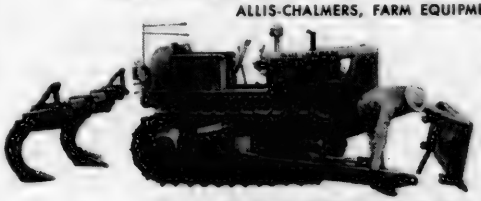

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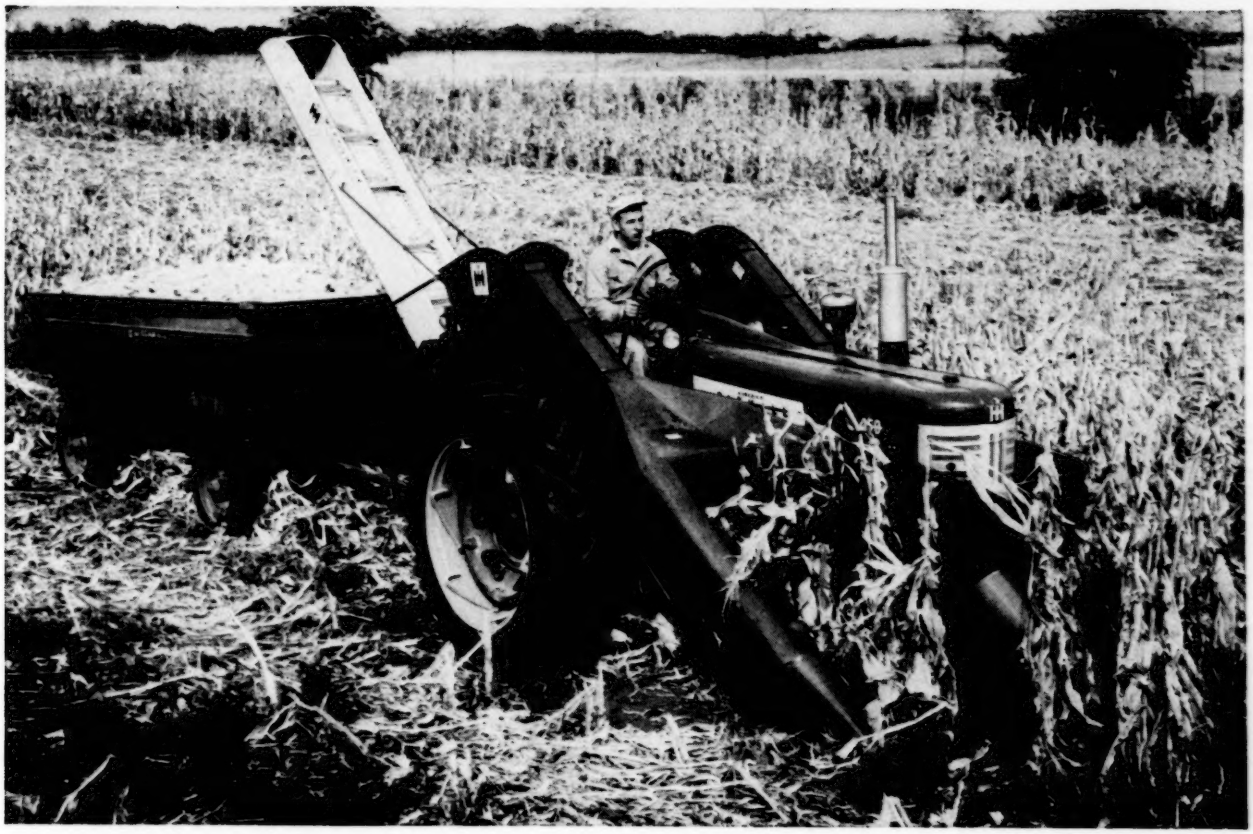
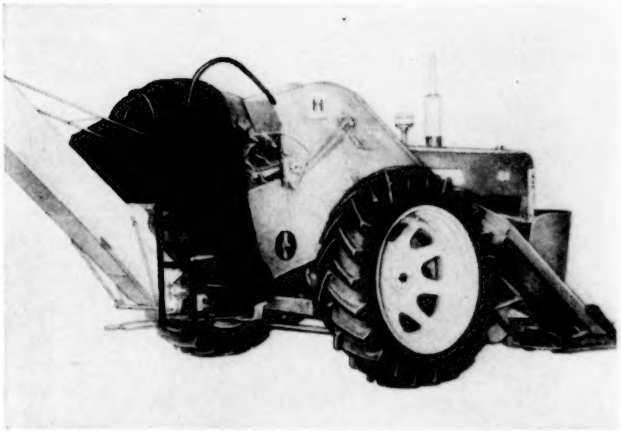
MOTT CORPORATION -:- 4015 Eberly Avenue Brookfield, Illinois



NOW! PICK or SHELL

with great corn-saving McCORMICK® 2-MH



New McCormick No. 10 sheller attachment quickly mounts on corn hopper of McCormick 2-MH picker . . . clean-shells at peak capacities of 1,500 to 2,000 bushels a day. Sealed bearings make it practically service free.

Now, farmers can harvest ear or shelled corn with the *same* McCormick 2-MH picker! Just add new No. 10 corn sheller attachment to field-shell 1,500 to 2,000 bushels a day! And *exclusive* IH design enables a farmer to switch between ear and shelled corn harvest in 10 minutes—*without* removing the sheller unit from his picker.

This 2-in-1 machine makes it practical to harvest feed corn on the cob, or field-shell cash corn the *same* day. Here's a profitable way to reduce field losses, labor costs, storage needs, and save custom sheller-men's fees to boot! And the comparatively low cost of this new unit brings field shelling within the reach of all McCormick 2-MH owners.

Visit with your local IH dealer about new McCormick sheller attachment for 2-MH picker. Or talk over other IH developments designed to streamline farming and "sweeten" farming profits.

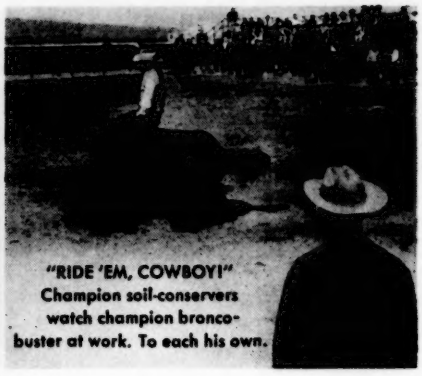
See Your

INTERNATIONAL HARVESTER Dealer

International Harvester Products *pay for themselves in use*—Farm Tractors and Equipment . . . Twine . . . Commercial Wheel Tractors . . . Motor Trucks . . . Construction Equipment—General Office, Chicago 1, Illinois

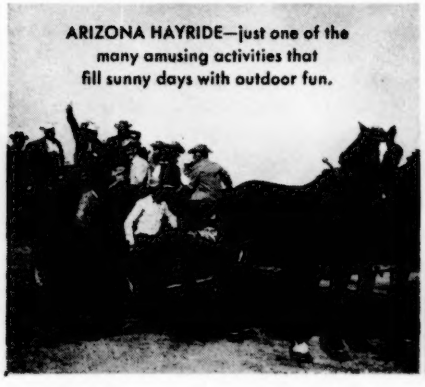
"WAITER!" Nothing like something tall and cool while basking on the palatial grounds of The Wigwam.

SIDE-DITCH SUPERINTENDENTS—Winners watch most advanced ditch-digging techniques on Goodyear's famous experimental farm.

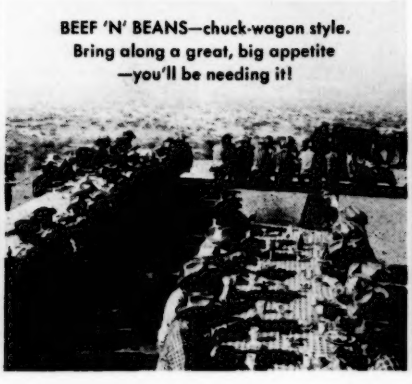


"RIDE 'EM, COWBOY!" Champion soil-conservers watch champion bronco-buster at work. To each his own.

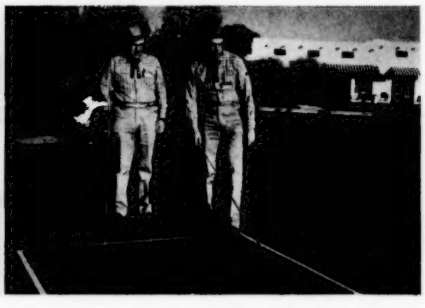
WIN A FREE WINTER VACATION AT GOODYEAR LUXURY RANCH!



ARIZONA HAYRIDE—just one of the many amusing activities that fill sunny days with outdoor fun.



BEEF 'N' BEANS—chuck-wagon style. Bring along a great, big appetite —you'll be needing it!



WINNERS MATCH SKILL at sundown shuffleboard. Every facility at The Wigwam, including huge swimming pool!

Farmers, ranchers, supervisors in all states can win all-expense-paid trip and vacation in Great Southwest!

A good job of soil conservation—large or small—can make you Goodyear's guest at the world-famous Wigwam, Litchfield Park, Arizona.

100 and more ranchers, farmers, supervisors—perhaps including you—will have 4 fun-packed, profitable days at The Wigwam this coming winter—plus luxurious transportation, both ways!

You will be given your own Western outfit—and can take your pick of swimming, riding, golf and other sports. There will be city, mountain and desert tours—and inspections of latest farm equipment and methods. Other awards include handsome bronze plaques and framed Certificates of Merit for runners-up.

BUT TIME'S A-WASTIN'—get all details NOW, without obligation, from your local Soil Conservation District Office and

Enroll now in Goodyear's 6th Annual National Soil Conservation Awards Program

GOODYEAR

THE GREATEST NAME IN RUBBER